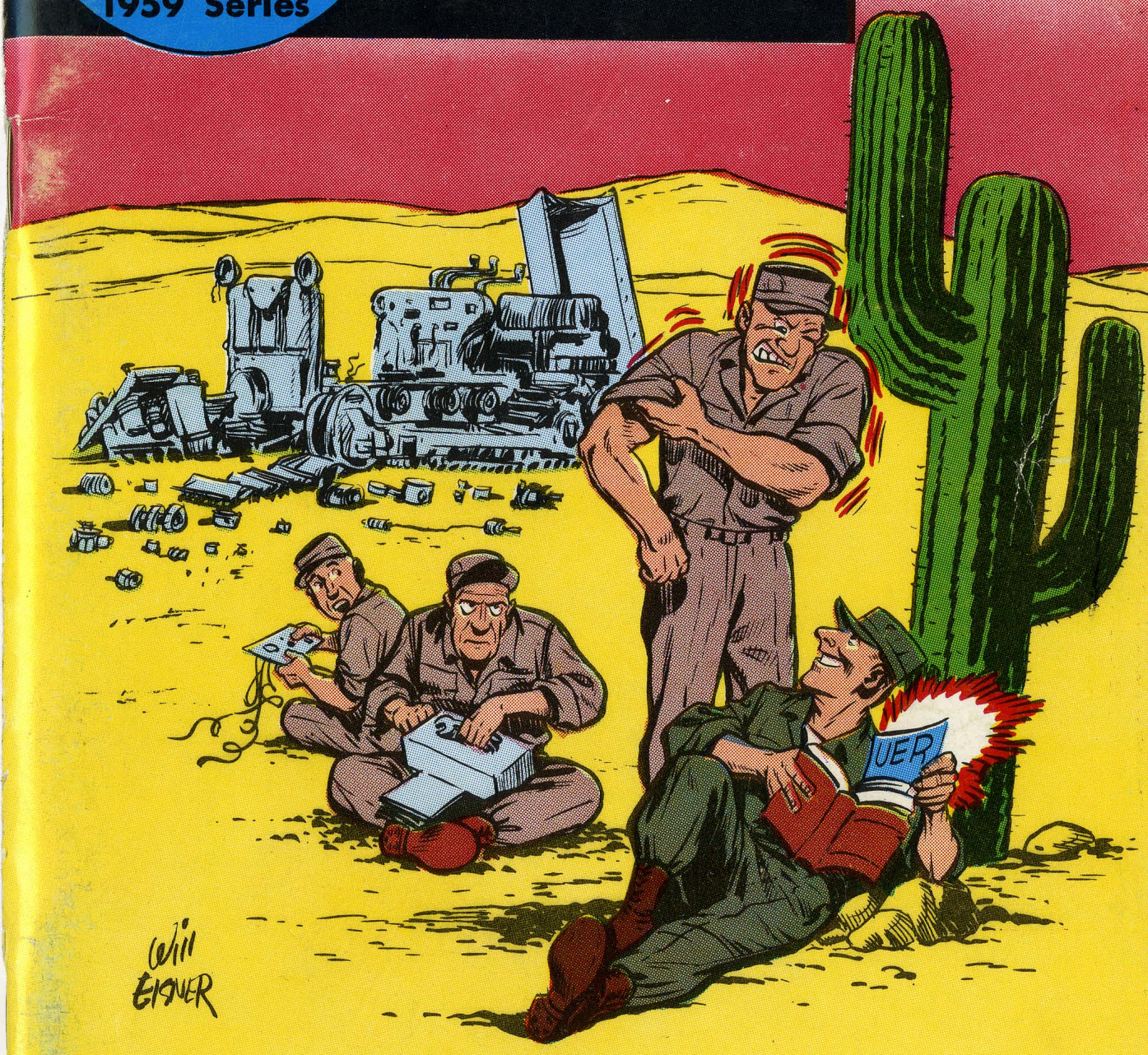
Issue 82

PS

1959 Series

THE PREVENTIVE MAINTENANCE MONTHLY



HEY, SARGE...HA, HA...REMEMBER THAT UER I WAS SUPPOSED TO SEND IN LAST SUMMER?...? WELL, GUESS WHAT...

YOUR FUTURE EQUIPMENT

And How You Can Help Design It

The other day Sgt Half-Mast got a call from one of the top maintenance men in the Pentagon.

He asked old Half-Mast to stop by and talk about what you (each and every U.S. soldier) can do to help him and other designers and engineers plan new equipment of all kinds for our Army of the future—five, ten, twenty, even fifty years from now.

He and Half-Mast had a long chat, and they both allowed as how there were two main ways you could help:

First, you can send in UER's (DA Form 468) on the equipment you now have. Tell the technical service people what is wrong with it, and especially what your ideas are on improving that equipment. AR 700-38 gives you the scoop on using DA Form 468.

Of course, you guys who've got electronic equipment listed in AR 700-39 use DD Forms 787 and 787-1, Electronic Failure Report—just like the AR says.

The designers and enginers who get your 468's, 787's and 787-1's really give 'em the once-over, 'cause they're always looking for ways to make Army equipment better.

Second, you can pass along in cards or letters to Sgt Half-Mast your ideas for improving the design of your equipment. (And don't worry—Half-Mast never tells anybody who wrote to him.) You can tell him, too, how equipment ought to be designed to make it easier and cheaper to maintain. Half-Mast will pass your ideas to the Army's design people, and when your idea's accepted, you get all the credit.

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ARMY

What the man in the Pentagon has in mind is equipment that:

- Has parts that are easier to get to for maintenance.
- Needs maintenance less often.
- Needs less time for maintenance.
- Needs fewer repair parts.
- Can be maintained by a soldier who may not be highly skilled or thoroughly trained.
- Is more reliable in operation.

Now—you are a design engineer . . . fire off with your ideas.

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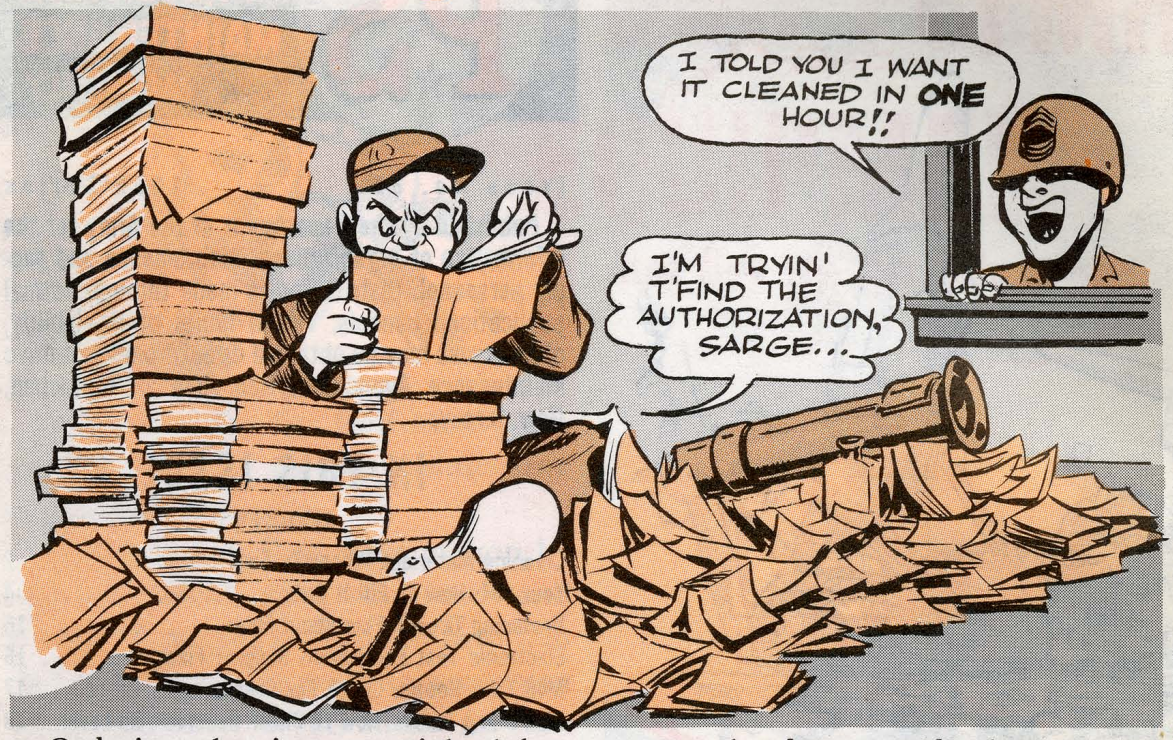

Ordering cleaning materials, lubes, common hardware, and other common stock you use every day would be an easy matter if you had 'em all listed in one big catalog and all you had to do was to fill out an order blank. 'Tain't that simple —you've got to know where to look, and what to use as your authority for ordering.

Your first step is to check the pubs you're supposed to have with your equipment. DA Pamphlet 310-4 gives you a list of Lube Orders, Tech Manuals, Tech Bulletins, MWO's and the —20P Tech Manuals. The Indexes to Supply Manuals for the different tech services will give you the number of the Supply Manual (SNL) you need for your equipment:

Signal—DA Pamphlet 310-21
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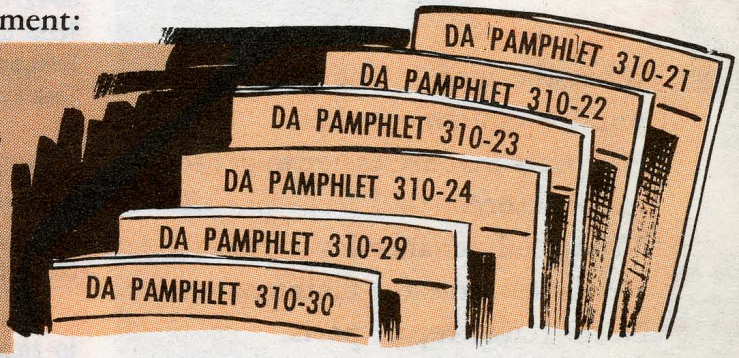

Your —20P manual or SNL will clue you about your cleaning materials and lubes, and they're your authority for asking for 'em.

But if it's necessary for you to use some items that aren't listed in those pubs, then you'd get 'em by justifying them under AR 725-5 (Sep 58), para 15h.

You'll find that many of the cleaning and lubing materials will have a Federal Stock Number listed, but for those items that don't, you'll have to find one.

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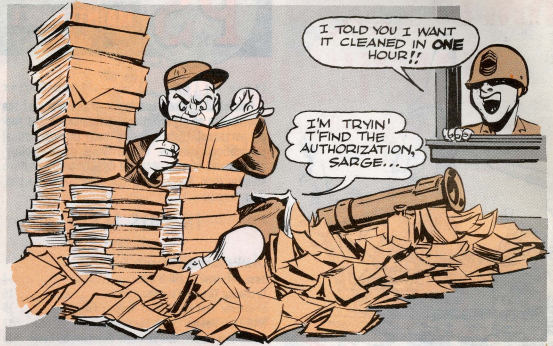

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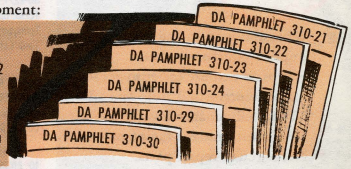

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When you come to lubes and preservatives, you'll find that SB 38-5-3, "List of Standard Lubricants, Hydraulic Fluids, Liquid Fuels, and Preservative Material Used by the Army," is a big help. This SB's been sent to Battalion and Company level. There's also SM 10-1-C4-1, which gives you info on petroleum, petroleum-base products and related material (FSC Group 91).

And SB 38-100 (March 1959) gives you a rundown of the preservation, packaging, and packing materials, supplies, and equipment used by the Army.

For a list of abrasives, adhesives, cleaners, preservatives, and related items for which the Ordnance Corps is responsible, check the following SM 9-1's: 6800, 5350, 8000, 9500, 5345 and 5305.

And if you want to get a rundown of hardware and abrasives, take a look at Group 53 of the different tech services. You'll find most of the screws, for example, in SM 9-1-5305-1 and SM 9-1-5305-2. SM 9-1-5306 lists bolts and SM 9-1-5307 gives you a rundown on studs.

If you're looking for a tech manual to give you info on cleaning, preserving, abrading, cementing, sealing, and lubing material, then you'll want to get hold of TM 9-1007.

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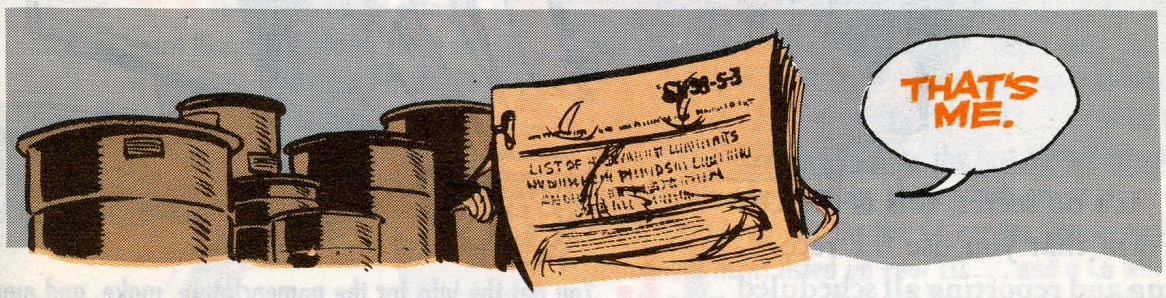

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For Complete Coverage of Engineer B & C Services, Technical Inspections . . .

YOUR 464's

It's no secret, this is the DA Form that you use for recording and reporting all scheduled PM services and the results of TI's made on Engineer equipment.

With a 464 in one fist, a pencil in the other, your pubs under your arm . . . you're ready to handle your bi-weekly or bi-monthly PM or TI's on your equipment. All this time-saver needs is a good mechanic like yourself to take it in hand. It covers all your new B & C services. Its long-winded title is "Work Sheet for Preventive Maintenance and Technical Inspection of Engineer Equipment."

HEADING

1. You get the info for the nomenclature, make, and model right from the ID plates and from the engine on the rig. The equipment's serial number should also be put at the upper right hand corner of pages 2 and 3. This'll identify these pages with the equipment on page 1.

2. This is the same date that's shown on the PM roster, DA Form 460.

3. Put in the hour meter reading or number of miles registered on the odometer. Never leave this one blank because the people scheduling maintenance periods on the DA Form 460 need this info. If the hour-meter is out of whack or the equipment doesn't have one—you have to estimate the hours that it's been in operation. Your Operational Log—like the one shown in TM 5-505—will give you the dope on this.

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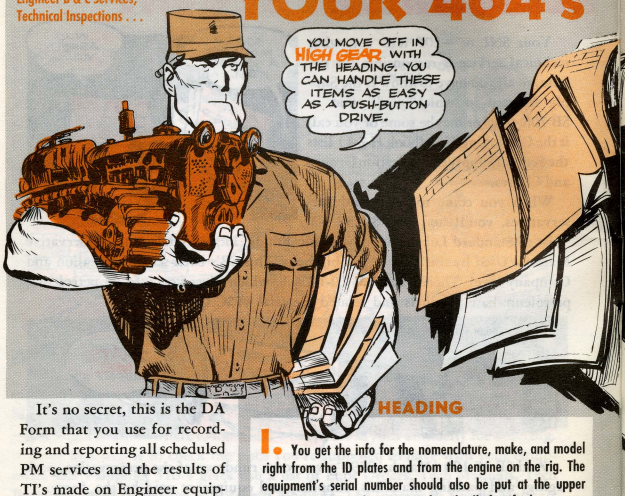

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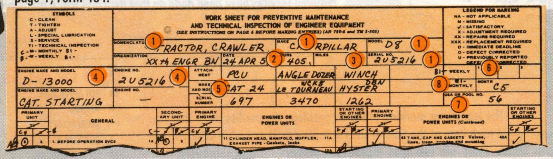
THE ANSWER

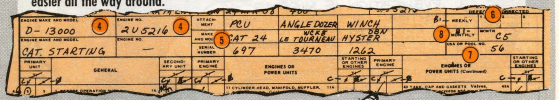
4. You get this info from the ID plates on the engine block. The first line is for the primary unit and the one beneath it is for the secondary unit. If you've got more than two engines, you need another page 1, Form 464.



5. The scoop on an attachment like a PCU, dozer blade or a winch is read right off the ID plate on the attachment.

6. Change the block to read Bi-Weekly or Bi-Monthly. Make sure the number of the service checks with the one that's listed on the PM Roster. If you're doing a bi-weekly (B service), you number it B1, B2, or B3 . . . that is, the 1st, 2nd, or 3rd bi-weekly since the last bi-monthly or C service. If it's a bi-monthly, show which one it is . . . C1, C2, C3, C4, C5, or C6. On the C4 service you cover the semi-annual items listed on your LO . . . and a C6 will tip you off it's time to pull your annual services—likewise according to the LO.

7. This is used only as an easy identifying number for the equipment. Since a lot of Engineer items don't get USA numbers, you'll use the pool number in some cases. If you've got a USA number and a pool number on the same piece of equipment, use the USA number as required on the DA Form 460. This'll tie your Form 464 in with the PM Roster and make it easier all the way around.



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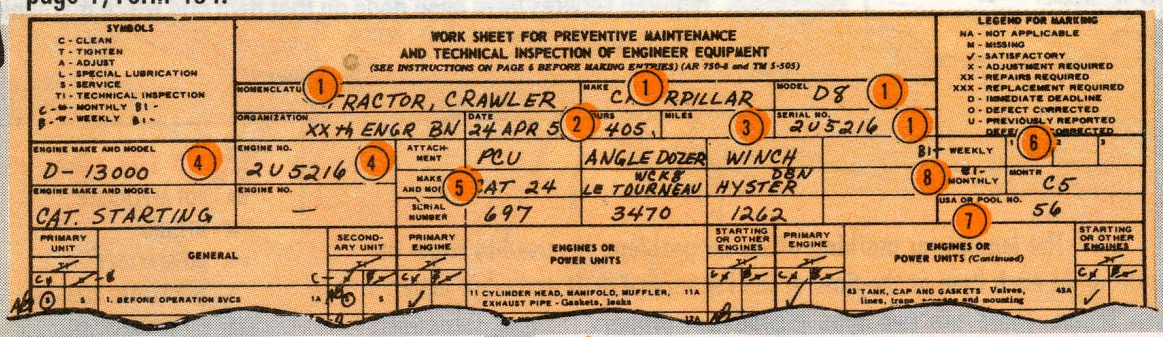

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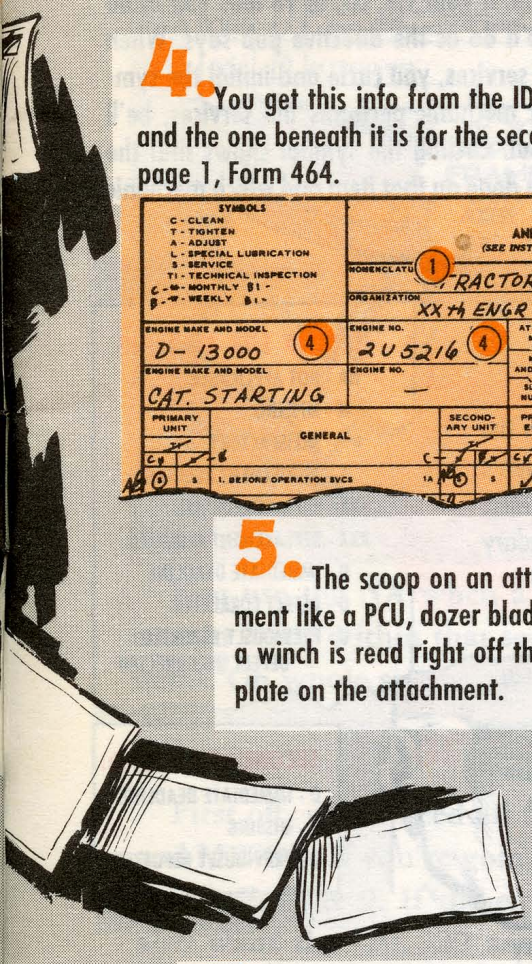

6. Change the block to read **Bi-Weekly** or **Bi-Monthly**. Make sure the number of the service checks with the one that's listed on the PM Roster. If you're doing a bi-weekly (B service), you number it B1, B2, or B3 . . . that is, the 1st, 2nd, or 3rd bi-weekly since the last bi-monthly or C service. If it's a bi-monthly, show which one it is . . . C1, C2, C3, C4, C5, or C6. On the C4 service you cover the semi-annual items listed on your LO . . . and a C6 will tip you off it's time to pull your annual services—likewise according to the LO.

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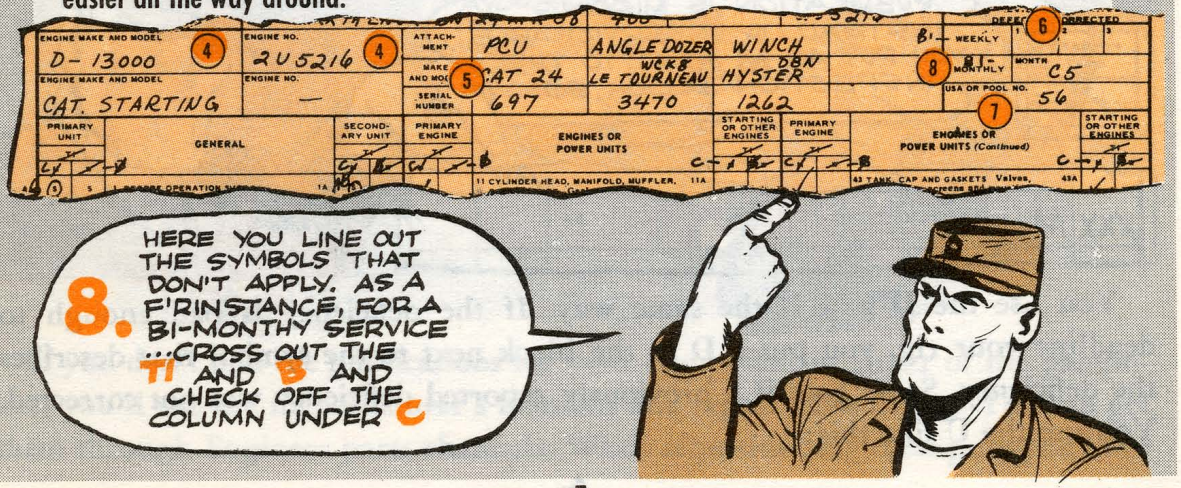


8. HERE YOU LINE OUT THE SYMBOLS THAT DON'T APPLY. AS A F'RINSTANCE, FOR A BI-MONTHY SERVICE ...CROSS OUT THE TI AND B AND CHECK OFF THE COLUMN UNDER C

SYMBOLS

C - CLEAN
T - TIGHTEN
A - ADJUST
L - SPECIAL LUBRICATION
S - SERVICE
TI - TECHNICAL INSPECTION
M - MONTHLY - B1
W - WEEKLY - B1

9. The symbols are used to show what service must be pulled on each item printed on the 464. These symbols show you the minimum service to be done. If your TM, LO, or TB tells you to do more, then, of course, you'll do as the directive pub says. When you complete the required services, you circle and initial the symbol. Same goes if another mechanic performs the services, he'll circle and initial the symbol. Circling the symbol shows that the required services have been done on that item and which mechanic did the work.

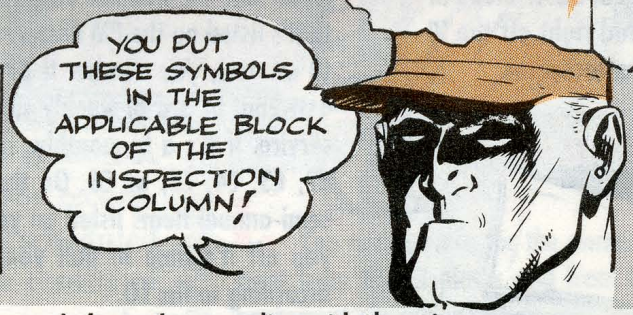
10. The legend for marking offers no problem. It's used to show the condition of each item at the time of the PM service or TI and what action's been taken. There are two type legends . . . primary . . . and secondary. The primary legend shows you the condition of each item and the secondary legend helps to explain it further.

LEGEND FOR MARKING

NA - NOT APPLICABLE
M - MISSING
✓ - SATISFACTORY
X - ADJUSTMENT REQUIRED
XX - REPAIRS REQUIRED
XXX - REPLACEMENT REQUIRED
D - IMMEDIATE DEADLINE
O - DEFECT CORRECTED
U - PREVIOUSLY REPORTED DEFECT UNCORRECTED

PRIMARY LEGEND:

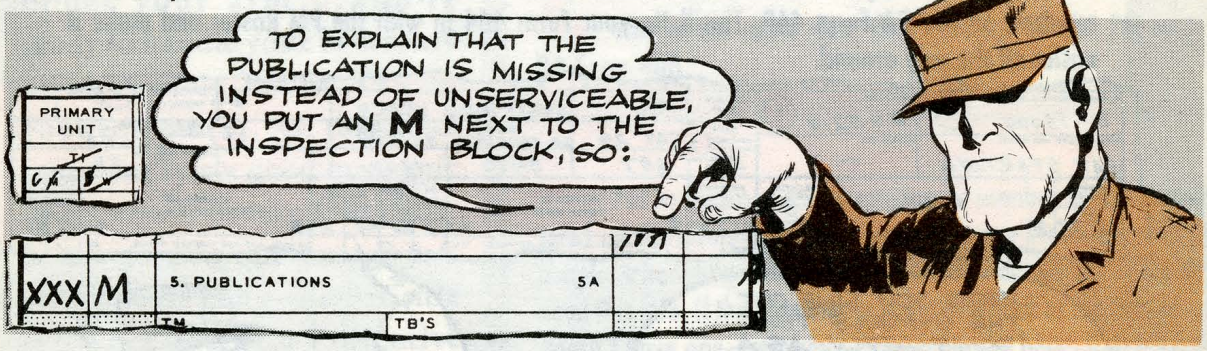
✓ - SATISFACTORY
X - ADJUSTMENT REQUIRED
XX - REPAIRS REQUIRED
XXX - REPLACEMENT REQUIRED



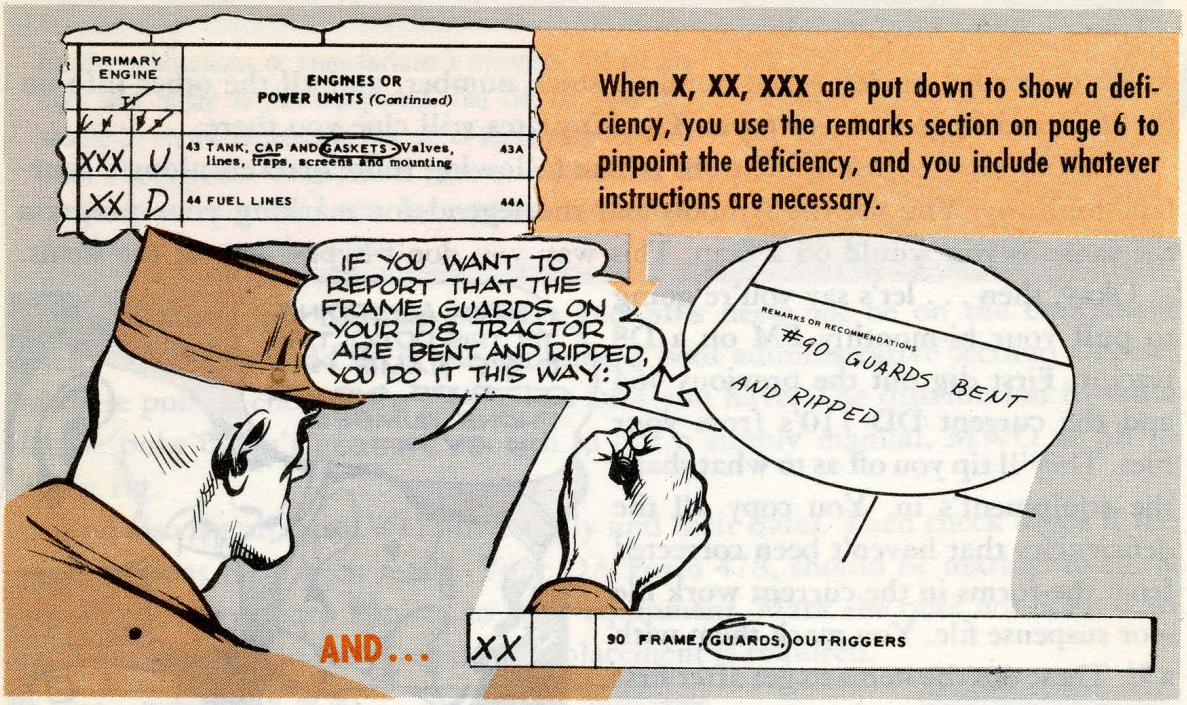
SECONDARY LEGEND:

D - IMMEDIATE DEADLINE
M - MISSING
U - PREVIOUSLY REPORTED

You enter these secondary symbols on the same line with the primary symbols . . . in the block that's not being used for the PM or TI. As a f'rinstance—during your bi-monthly service you find that Item 5, Publications, needs replacing. So you put an **XXX** in the bi-monthly column in the Item 5 inspection block, like this:



You use the **D** and **U** the same way. If the deficiency is bad enough to deadline your rig, you put a **D** in the block next to the symbol that describes the deficiency. Same goes if a previously reported deficiency was not corrected. You use the **U** like this:



You use the **NA** when a section of your 464 applies to your equipment and certain items within that section do not. The **NA** goes in the block next to these items. On whole sections which don't apply, you don't need the **NA.**

GETTING DOWN TO BUSINESS

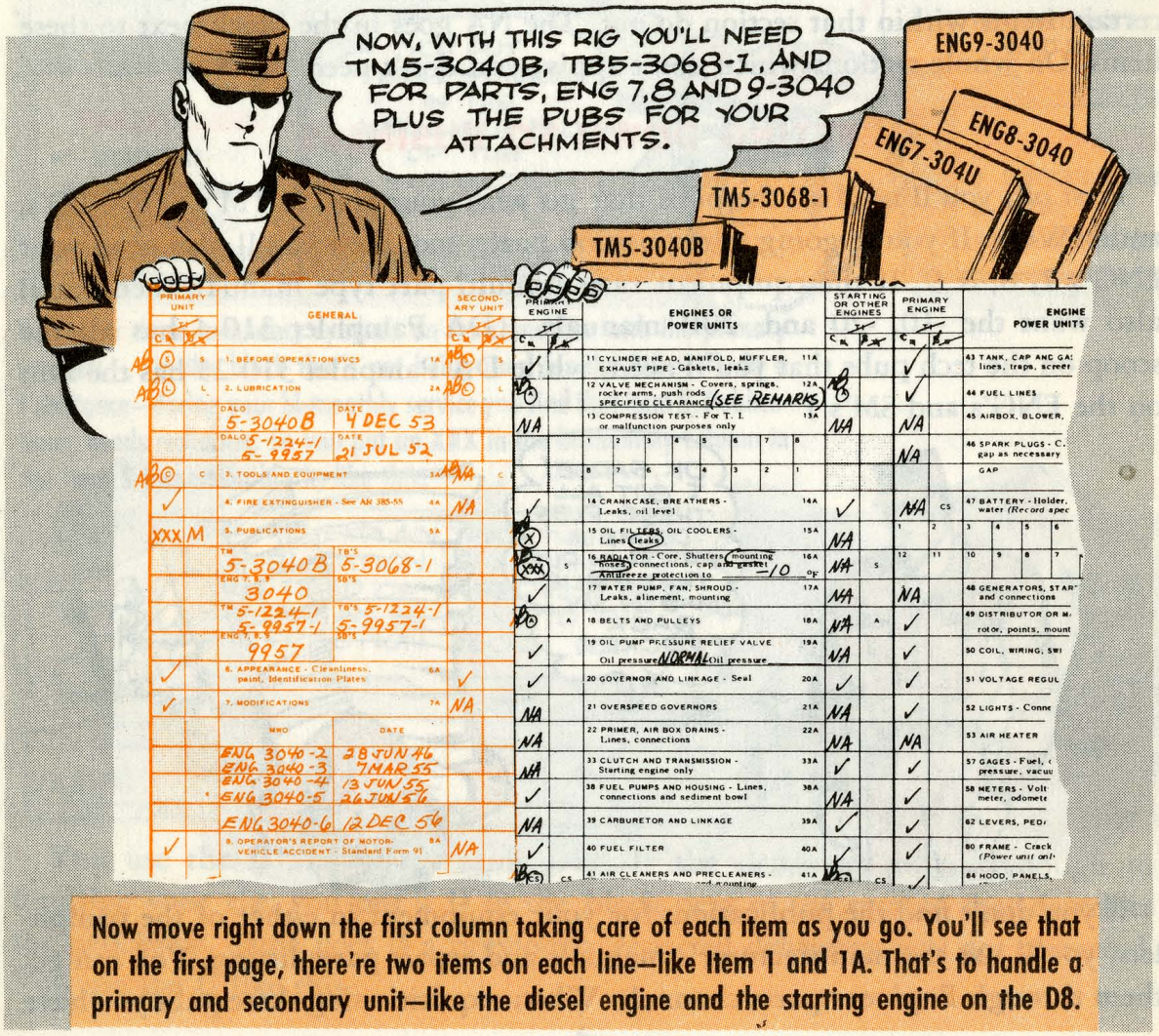
First off, you'll need all the pubs that go with your rig . . . TM's, TB's, LO's, and MWO's. If you're going to requisition parts, too, then you'll also need your ENG's 7, 8, & 9. If the equipment rates a multi-part type manual, then you'll also want the -10, -20 and -20P manuals. (DA Pamphlet 310-4 has all the scoop on the tech pubs that you'll need, while DA Pamphlet 310-25 has the info on the ENG's and SM's.)

If you don't find the publications for your equipment in either of the pamphlets, you'll use the manufacturer's manuals and repair parts listing. You can get them through Engineer parts channels. When requisitioning these pubs you have

to list the make, model, serial number, stock number, and all the other info on the item and its component parts. The ID plates will clue you there.

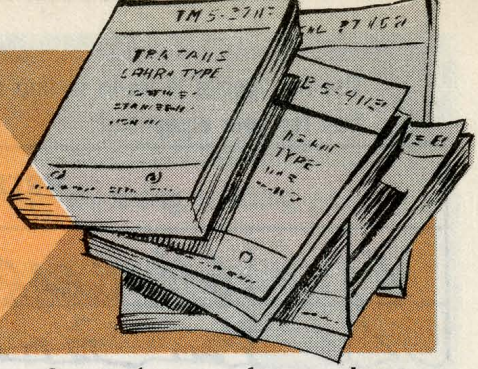
You can see that using the pubs is like following route markers along a four-lane highway. You use the symbols and the legend for marking your progress the same as you would on a map. This way you don't bypass any of the items.

Okay, then . . . let's say you're going to pull your bi-monthly PM on a D8 tractor. First dig out the previous 464 and the current DD 110's from your files. They'll tip you off as to what shape the equipment's in. You copy all the deficiencies that haven't been corrected from the forms in the current work file —or suspense file. You mark them with a U. These are the items to get after first when you go into action.



Now move right down the first column taking care of each item as you go. You'll see that on the first page, there're two items on each line—like Item 1 and 1A. That's to handle a primary and secondary unit—like the diesel engine and the starting engine on the D8.

On the publications or manufacturer's manuals, list all the ones that apply to this equipment. The TM, LO, and TB's should be on the equipment. One set of these pubs for each piece of equipment. If not, check them as missing. But, if they've been requisitioned, enter the requisition number and the date in the remarks section.

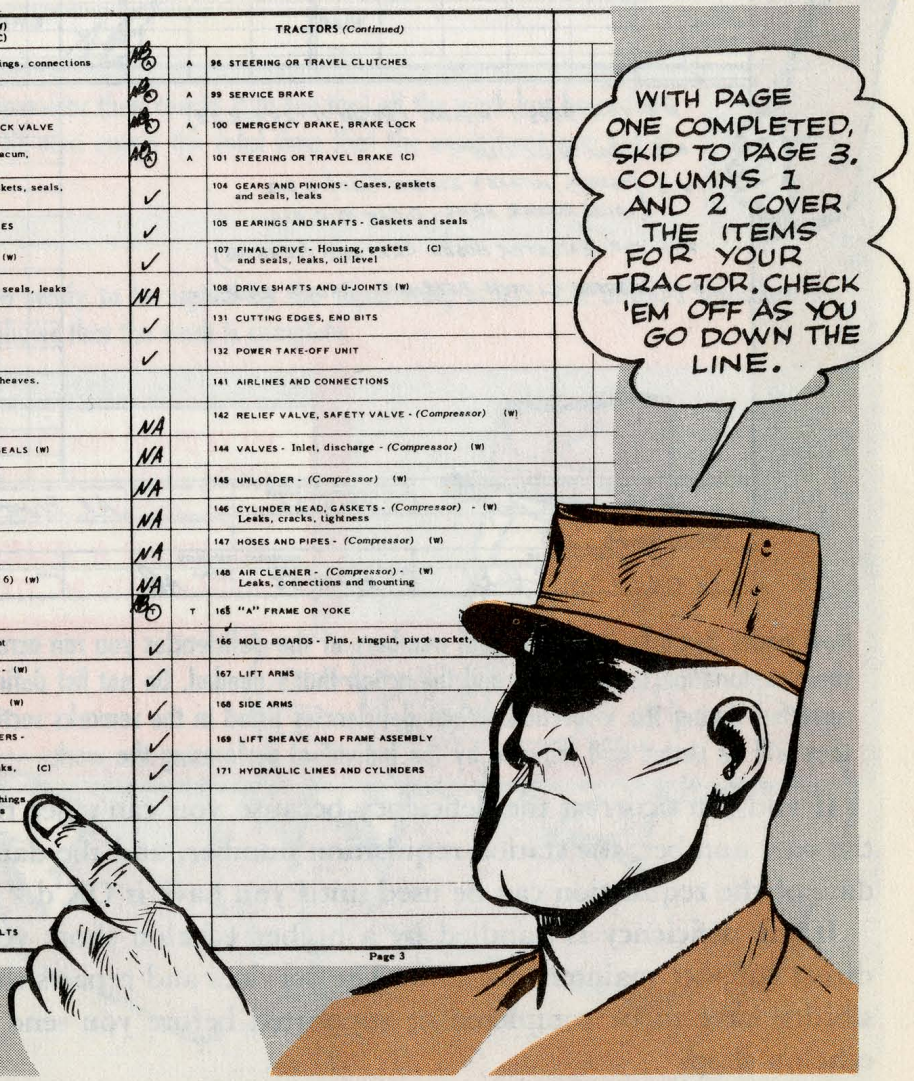


The ENG supply manual, MWO's and SB's need not be on the equipment itself, but they should be in the equipment pool administrative section. One set of these pubs is enough for all the Cat D8's you have. The distribution formula in the pubs doesn't give you enough to put a supply manual, MWO or SB in every rig.

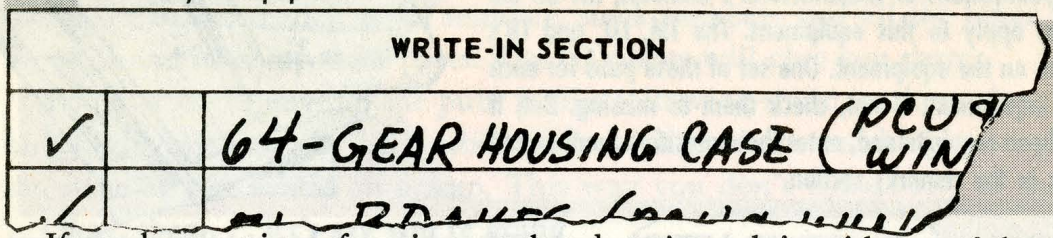
You also list all the MWO's that apply and their dates. Then check to see if the modifications have been made. Your DA Form 478, should be marked to show which ones have been applied to your equipment. Mark the ones not done with an XX, or XXX, to show repair or replacement is required.

		TRACTORS WHEELED (W) CRAWLER (C)			TRACTORS *(Continued)*
✓		52 LIGHTS, WIRING, SWITCHES - Mountings, connections	XX	A	96 STEERING OR TRAVEL CLUTCHES
NA		56 STEERING GEAR ASSEMBLY (W)	XX	A	99 SERVICE BRAKE
✓		59 REGULATOR, SAFETY VALVE, CHECK VALVE	XX	A	100 EMERGENCY BRAKE, BRAKE LOCK
NA		60 PUMPS AND DRIVES - Hydraulic, vacum, air, mountings	XX	A	101 STEERING OR TRAVEL BRAKE (C)
NA		61 VALVES, CYLINDERS, JACKS - Gaskets, seals, packing, leaks, lines	✓		104 GEARS AND PINIONS - Cases, gaskets and seals, leaks
✓		62 LEVERS, PEDALS, LINKAGE, CABLES	✓		105 BEARINGS AND SHAFTS - Gaskets and seals
NA		63 UNIVERSAL JOINTS, BALL JOINTS (W)	✓		107 FINAL DRIVE - Housing, gaskets (C) and seals, leaks, oil level
✓		64 GEAR HOUSING, CASES - Gaskets, seals, leaks	NA		108 DRIVE SHAFTS AND U-JOINTS (W)
NA		65 GEARS AND PINIONS	✓		131 CUTTING EDGES, END BITS
NA		66 BEARINGS AND SHAFTS	✓		132 POWER TAKE-OFF UNIT
XX	A	67 POWER CONTROL UNITS - Drum, sheaves, clutches, brakes, shear pin			141 AIRLINES AND CONNECTIONS
✓		68 DRUMS, SHEAVES, CABLES	NA		142 RELIEF VALVE, SAFETY VALVE - *(Compressor)* (W)
NA		69 TIE RODS, LINKAGE, BOOTS AND SEALS (W)	NA		144 VALVES - Inlet, discharge - *(Compressor)* (W)
✓		71 BOOSTER, STEERING ASSEMBLY	NA		145 UNLOADER - *(Compressor)* (W)
NA		72 HYDRAULIC TANK	NA		146 CYLINDER HEAD, GASKETS - *(Compressor)* - (W) Leaks, cracks, tightness
✓		73 WINCH, CHAINS	NA		147 HOSES AND PIPES - *(Compressor)* (W)
NA	S	76 TIRES - (Record pressure on page 6) (W)	NA		148 AIR CLEANER - *(Compressor)* - (W) Leaks, connections and mounting
✓		77 TOW HITCH, PINTLE HOOK	XX	T	165 "A" FRAME OR YOKE ✓
✓		80 FRAME - Cracks, welds, alinement	✓		166 MOLD BOARDS - Pins, kingpin, pivot socket,
NA		81 FRONT AXLE ASSEMBLY, WHEELS - (W) Bearings, mountings	✓		167 LIFT ARMS
NA		82 REAR AXLE ASSEMBLY, WHEELS - (W) Bearings, mountings	✓		168 SIDE ARMS
✓		83 SPRINGS, EQUALIZERS, STABILIZERS - Bracket, shackles, mountings	✓		169 LIFT SHEAVE AND FRAME ASSEMBLY
✓		87 TRACK ASSEMBLIES - Plates, links, (C) bushings - pins	✓		171 HYDRAULIC LINES AND CYLINDERS
✓		88 IDLERS, ROLLERS - Springs, bushings, bearings, seals, shafts, mountings	✓		
XX	A	89 TRACK TENSION (C)			
XX	T	90 FRAMES AND GUARDS			
✓		93 TRANSMISSION, TRANSFER CASE Gaskets, seals, leaks, oil level			
XX	A	94 DRIVES, SPROCKETS, CHAINS, BELTS			

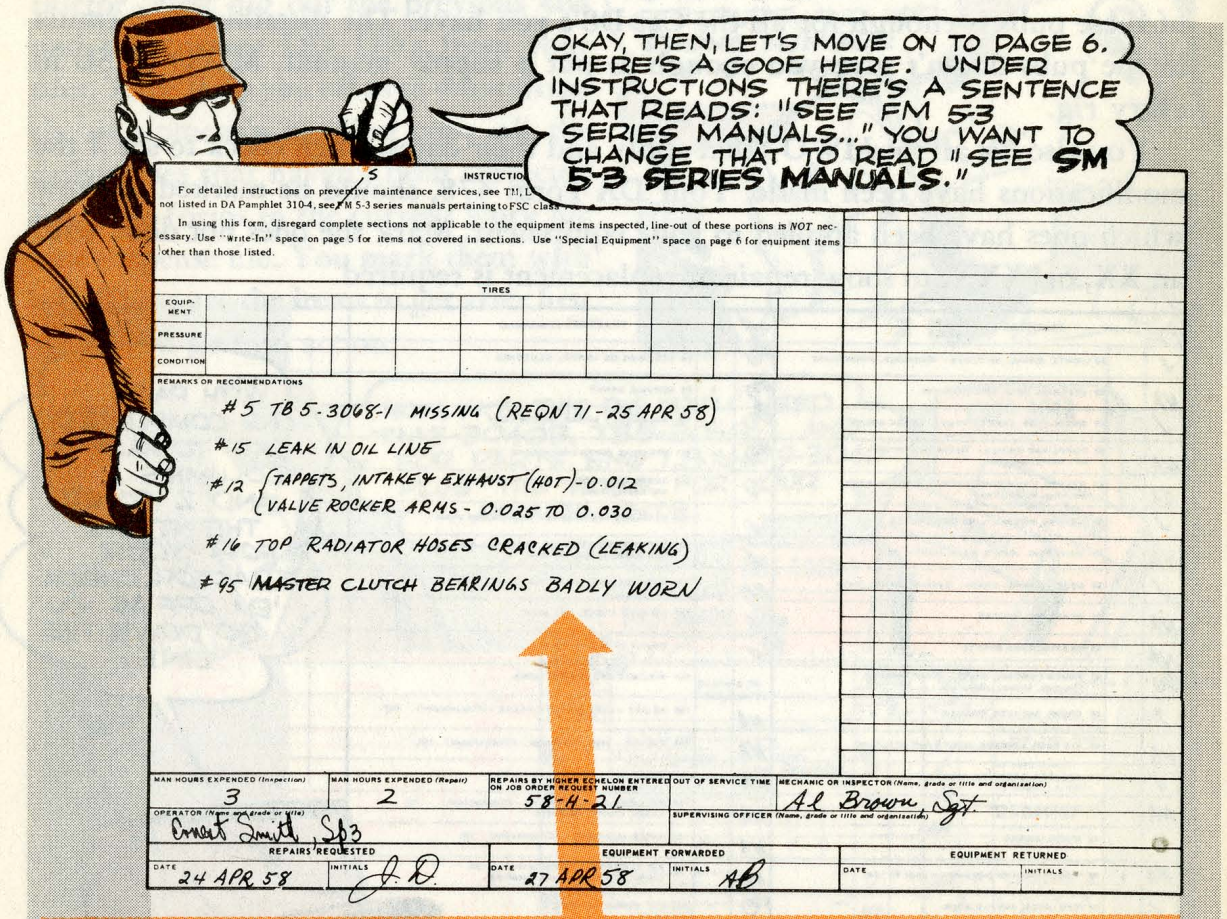
Page 3



Use the Special Write-In section on Page 5 for Items that aren't listed under regular section for your equipment



If you have a piece of equipment that doesn't work in with any of the sections, then use the SPECIAL EQUIPMENT section on page 6.



Now under Remarks, note the item numbers of the deficiencies you ran across on the D8 and give a short explanation for each one and the action that's needed. Do not list deficiencies which have been corrected during the inspection. When deficiencies listed in the remarks section have been corrected, they will be circled and initialed by the individual performing the work.

If you can't correct the deficiency because you can't get the parts—you show the part number, the station requisition number, and the date it was OK'd. The date of the requisition can be used until you have it OK'd.

If the deficiency is handled by a higher echelon shop, you report it to your direct support maintenance unit. The services and repairs that are your responsibility have to be completed or supported before you send the rig to a higher echelon shop.

BI-WEEKLY, BI-MONTHLY SERVICES

When the operator or mechanic has taken all the action he can—like testing, repairing, servicing—he signs his Form 464.

MAN HOURS EXPENDED (Inspection)	MAN HOURS EXPENDED (Repair)	REPAIRS BY HIGHER ECHEL ON JOB ORDER REQUEST NI
3	2	58-H-2

OPERATOR (Name and grade or title): Ernest Smith, Sp3

REPAIRS REQUESTED

DATE	INITIALS	DATE
24 APR 58	J. D.	27 APR 5

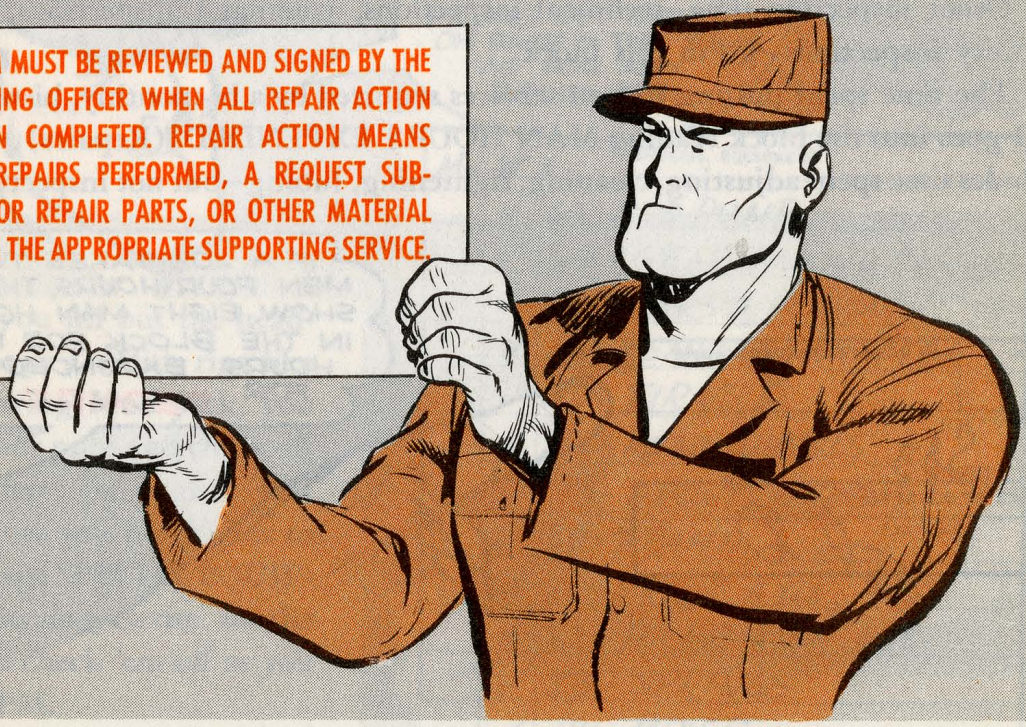
ON ENTERED MBER	OUT OF SERVICE TIME	MECHANIC OR INSPECTOR (Name, grade or title and organization)
1		Al Brown, Sgt.
	SUPERVISING OFFICER (Name, grade or title and organization)	

EQUIPMENT FORWARDED		EQUIPMENT RETURNED	
8	INITIALS AB	DATE	INITIALS

The section chief or maintenance supervisor then checks it to see that all the work has been done and the items circled and initialed. He also enters the total time that the equipment was out of service.

The 464 is now ready to be signed by the supervising officer. The officer's signature on the Form 464 shows that the work is complete.

THE FORM MUST BE REVIEWED AND SIGNED BY THE SUPERVISING OFFICER WHEN ALL REPAIR ACTION HAS BEEN COMPLETED. REPAIR ACTION MEANS ACTUAL REPAIRS PERFORMED, A REQUEST SUBMITTED FOR REPAIR PARTS, OR OTHER MATERIAL THROUGH THE APPROPRIATE SUPPORTING SERVICE.

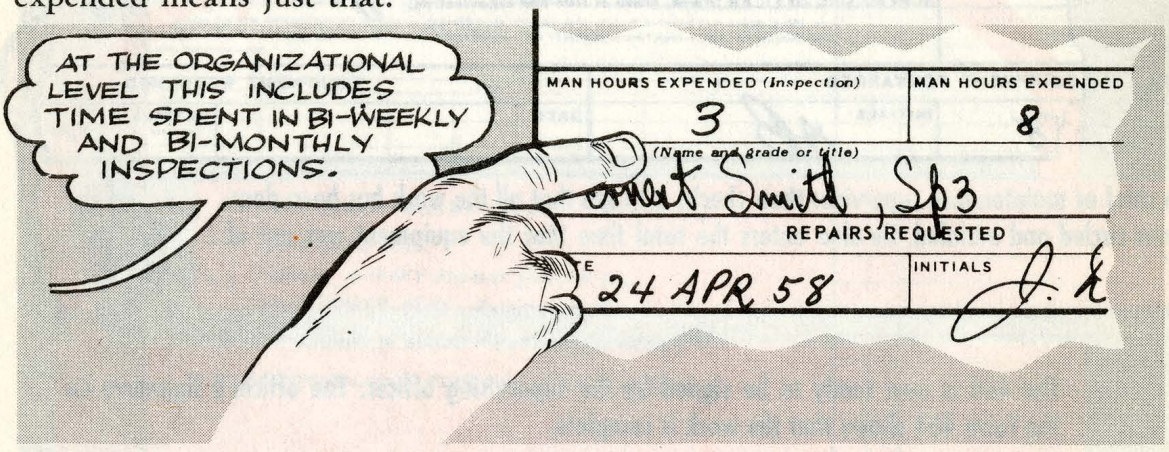


TECHNICAL INSPECTIONS

When a technical inspection has been performed on an item of equipment . . . by a command inspection . . . spot check inspection . . . or field maintenance—the completed Form 464 is kept on file in the Organizational Equipment File until another technical inspection has been completed on the equipment. Then the old TI is destroyed and the latest one filed in its place. The supervising officer signs the 464 to certify to its accuracy.

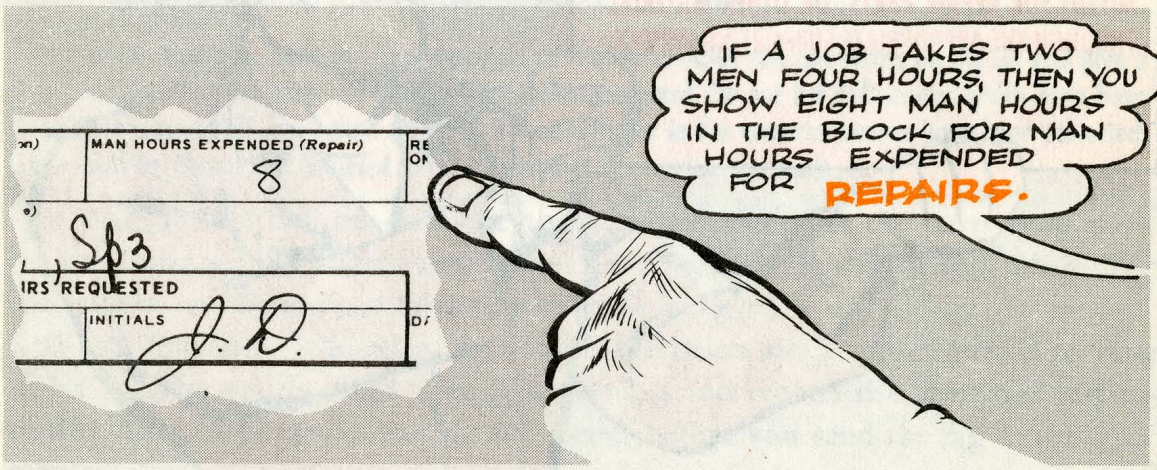
MAN HOURS

The spaces to show the man-hours spent servicing and inspecting the equipment is part of the face-lifting job done on the 464. The block for man hours expended means just that.



Other inspection time—technical inspections, command inspections, serviceability inspections—go in this block.

The time spent pulling PM on services required by a bi-monthly, bi-weekly or TI goes into the block reading MAN HOURS EXPENDED (Repairs). This includes time spent adjusting, cleaning, tightening, lubing—but not inspection time.



OUT-OF-SERVICE time is the total time that the equipment is out of service for inspection and repairs. This also includes the time it was sidelined waiting for parts or higher echelon work . . . plus the time that it takes your outfit or your support unit to make the repairs.

ER ECHELON ENTERED QUEST NUMBER	OUT OF SERVICE TIME	MECHANIC G
4-21		Al
	SUPERVISING OFFICER (Name, grade o	
EQUIPMENT FORWARDED		
1058	INITIALS	

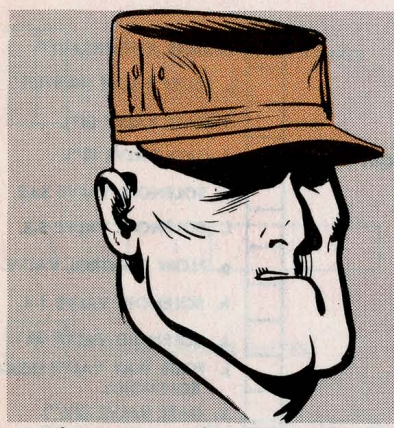
THE NUMBER THAT'S GIVEN TO A JOB ORDER REQUEST BY THE SUPPORTING FIELD MAINTENANCE OUTFIT GOES INTO THE SPACE FOR REPAIRS BY HIGHER ECHELON ENTERED ON JOB ORDER REQUEST NUMBER.

SPECIAL EQUIPMENT

With special equipment that doesn't apply to any of the sections, you fill out the heading and left hand column on page 1 of your 464 and the other two columns if the equipment has an engine. Then, flip the sheet to the SPECIAL EQUIPMENT section on page 6.

PRIMARY UNIT		GENERAL		SECONDARY UNIT	
C	B			C	B
AB ⑤	S	1. BEFORE OPERATION SVCS	1A	AB ⑤	S
AB ⑥	L	2. LUBRICATION	2A	AB ⑥	L
		DALO 5-3040A	DATE 25 NOV 53		
		DALO 5-1224-1 5-9957	DATE 24 OCT 56		
AB ⑦	C	3. TOOLS AND EQUIPMENT	3A	AB NA	C
✓		4. FIRE EXTINGUISHER - Spec AR 385-55	4A	NA	

Here's the way you'd write-up a weekly service on a Koehring Mud Jack, Model 50-2A. A lot of time can be saved by mimeographing this info on the 464.



YOU USE THE SYMBOL AND LEGEND FOR MARKING AND FILLING OUT THE INFO ON PAGE 6 THE SAME AS FOR ANY EQUIPMENT.

First, you fill out the heading on page 1. With rigs like the Koehring Mud Jack, you follow your pubs and check off all the items on page 1 that apply. Now you jump over to page 6 to the SPECIAL EQUIPMENT section, write in the items and check 'em off as you do your PM.

M	C	W	B	SPECIAL EQUIPMENT
	✓			60 - MUD PUMP
	✓			64 - GEAR HOUSING CASINGS
	✓			65 - GEARS & PINIONS
	✓			66 - BEARINGS & SHAFTS
	✓			76 - TIRES
	✓			78 - REAR WHEELS
	✓			79 - FRONT WHEELS
	✓			80 - FRAME
	✓			81 - FRONT AXLE ASSY
	✓			82 - REAR AXLE ASSY
	✓			83 - SPRINGS
	✓			181 - MIXER

NIKE ELEVATOR

Services on the Nike hydraulic elevator are performed according to TM 5-9011. Use your Form 464-B(R), which covers all the services listed in the TM. You check 'em off as you go along.

YOUR 464-B (R) IS NOT A DA FORM—IT'S TO BE REPRODUCED LOCALLY AND WILL LOOK SOMETHING LIKE THIS:

WORK SHEET FOR PREVENTIVE MAINTENANCE AND TECHNICAL INSPECTION OF SPECIAL PURPOSE HYDRAULIC ELEVATORS AND DOORS

ORGANIZATION:	SITE NUMBER:	SECTION NUMBER:
ITEM SERIAL NUMBER:	TYPE OF INSPECTION	DATE:

LEGEND: ✓ SATISFACTORY X-ADJUSTMENT: XX-REPLACEMENT: XXX-REPAIR: O-CORRECTED:

SYMBOLS: □ INSPECT & CORRECT: C-CLEAN: T-TIGHTEN: A-ADJUST: L-LUBRICATE: S-SERVICE.

GENERAL

TI	CM	WB	
S	S		1. BEFORE OPERATION SERVICES.
L	L		2. LUBRICATION.
C	C		3. TOOLS AND EQUIPMENT.
			4. FIRE EXTINGUISHER
			5. PUBLICATIONS.
			6. APPEARANCE
			7. MODIFICATIONS.
			8.
			9.

TI	CM	WB	
			20. PEDESTAL ASSEMBLY—Adjusting screw, pin, lock.
			21.
			22.
			23.

TI	CM	WB	
			27. PUMP NUMBER TWO.

HYDRAULIC EQUIPMENT

TI	CM	WB	
			24. BASE & OIL RESERVOIR SUPPORT—Anchor bolts, welds, etc.
			25. MAIN OIL RESERVOIR—Leaks, filters, covers.
			26. PUMP NUMBER ONE.

A	a. BELTS AND SHEAVES.
	b. RELIEF VALVE (HRV-15).
	c. GATE VALVE (4").
	d. GATE VALVE (3").
	e. SOLENOID VALVE SA2.
	f. SOLENOID VALVE S-3.
	g. FLOW CONTROL VALVE.
	h. SOLENOID VALVE S-4.
	i. SOLENOID VALVE SA1.
	j. FOUR WAY VALVE (S2A-S2B SOLENOID).
	k. GATE VALVE (2½").
	l.
	m.

MECHANICAL EQUIPMENT

TI	CM	WB	
			10. PLATFORM & FRAME—Level, alignment, shims, floor plates, positioning.
			11. Equalizer Cable—Clamps, cable, adjusting eye & brackets.
			12. EQUALIZER CABLE SHEAVES—Pins, sheaves and brackets.
			13. GUIDE RAILS—Alignment, anchor bolts, and casters, brackets.
			14. GUIDE ROLLERS—Rollers, pins and brackets.
A	A		15. LOCKING BARS—Linkage, pins, shims, brackets.
			16. AUTOMATICALLY OPERATED DOORS—Plates, brackets, hinge, pins.
T	T		17. WEATHER & GAS DOOR SEAL.
			18. COVER PLATES, EMBEDDED ANGLE DOOR OPENING.

	a. BELTS AND PULLEYS
	b. RELIEF VALVE (HRV-12).
	c. GATE VALVE (3").
	d. SOLENOID VALVE S-5.
	e. SOLENOID VALVE S-B.
	f. SOLENOID VALVE S-6.
	g. FOUR WAY VALVE (S1A, S1B, Solenoid).
	h. GATE VALVE (1½").
T	i. FLANGES, COUPLINGS, UNIONS AND PIPING.
	j.
	k.
	l.
	m.

T	T	
		28. MANIFOLD, LINES AND FITTINGS.
		29. PRESSURE SWITCH NUMBER ONE.
		30. PRESSURE GAGE.
		31.
		32.
		33.
		34.

MAIN CYLINDER AND PLUNGER ASSEMBLY

TI CM WB

35. TOP BEARING, RING ASSEMBLY— Gland, packing, and ring; pressure plate wiper packing.

36. PLATE, PLATFORM CLAMP ASSEMBLY.

37. MAIN PLUNGER.

38. PIPING AND VALVES.

39.

40.

41.

TI CM WB

46. HOSES, PIPING AND FITTINGS.

47. PRESSURE BALANCING GATE VALVES.

48.

49.

TI CM WB

57 LIMIT SWITCHES AND CAMS.

1 LS, 2 LS, 5 LS, 6 LS, 9 LS, 10 LS, 11 LS, 12 LS, 13 LS, 14 LS, 15 LS, 16 LS, 17 LS, 18 LS, 19 LS, 20 LS, 21 LS, 22 LS

CYLINDERS

TI CM WB

42. LOCKING BAR CYLINDERS.

43. HOSES, PIPING AND FITTINGS

44 DOOR CYLINDERS.

45. FLOW CONTROL VALVES.

ELECTRICAL EQUIPMENT

50. SERVICING WIRING AND SWITCHES.

TI CM WB

51. CONTROL RELAY CABINETS.

52. MOTOR STARTER CABINET.

53. ELECTRIC MOTORS.

54. MASTER AND ELEVATOR CONTROL STATIONS.

55.

56.

58 CONDUITS AND JUNCTION BOXES.

TESTS

TI CM WB

59. MASTER CONTROL STATION TEST.

60 ELEVATOR CONTROL STATION TEST.

61 CONSOLE CONTROL STATION TEST.

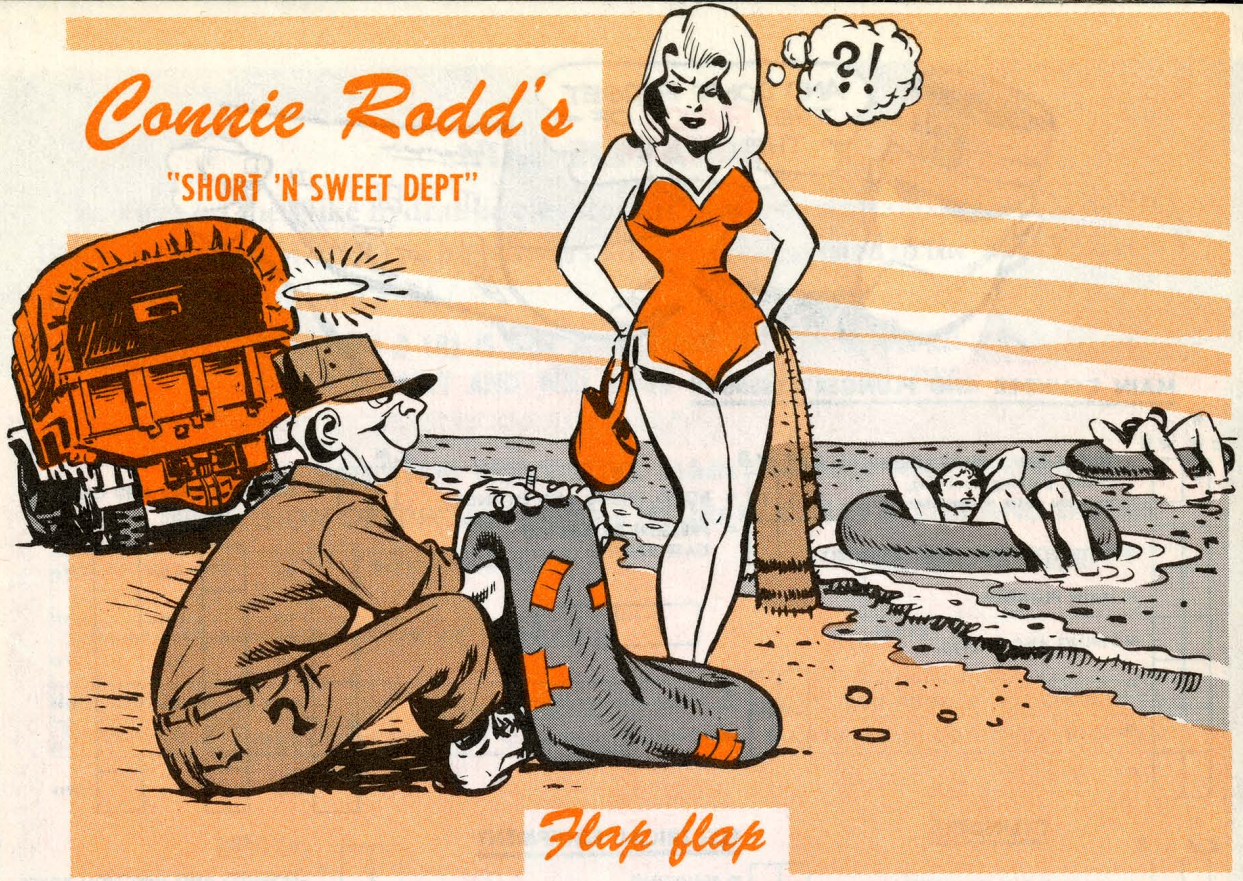
OPERATOR:	MECHANIC OR INSPECTOR *(Grade or Title)*
REPAIRS BY HIGHER ECHELON ON JOB ORDER NUMBER:	SUPERVISING OFFICER *(Grade or Title)*

REPAIRS REQUESTED		EQUIPMENT FORWARDED		EQUIPMENT RETURNED	
DATE:	INITIALS:	DATE:	INITIALS:	DATE:	INITIALS:

REMARKS OR RECOMMENDATIONS:

Connie Rodd's

"SHORT 'N SWEET DEPT"



Flap flap

To save yourself from running into a flap about flaps any time you replace a tire on your vehicle, keep a grip on the old flap until you're sure there's one with the replacement tire.

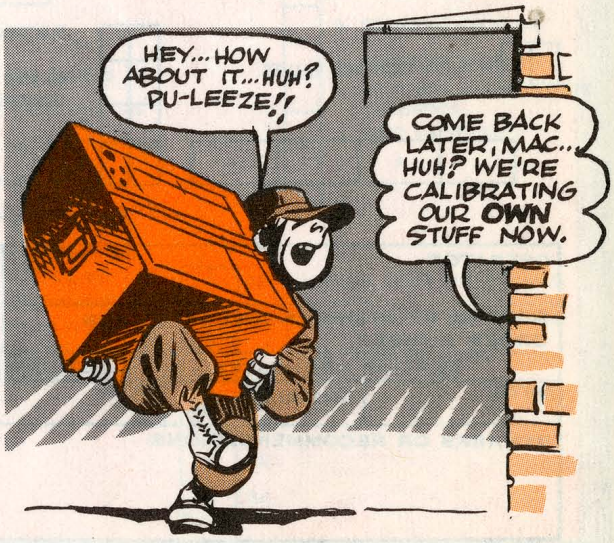
If you get a new tire, odds are you'll get a flap. If you get a re-cap tire—no flap. And an old flap's better'n no flap a'tall.

This doesn't mean to hoard 'em. If you get a flap with that replacement tire, loosen up your grip on the old one and give the next guy a break.

The three R's

Does your outfit use Ordnance electronic test equipment? Then it's up to you to contact your support unit any time the equipment needs repairing, recalibrating or replacing.

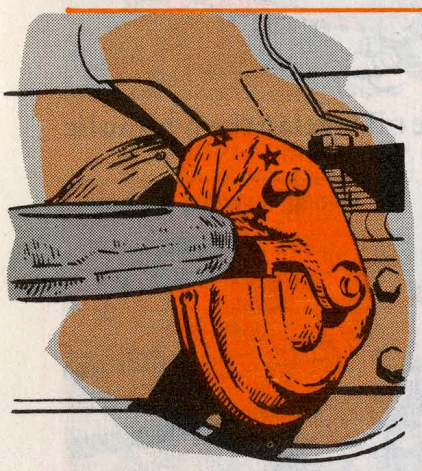
And you can be pretty sure you get a good calibration job 'cause your support unit won't check your equipment if 90 days have gone by since their own testing gear was given the old once over.



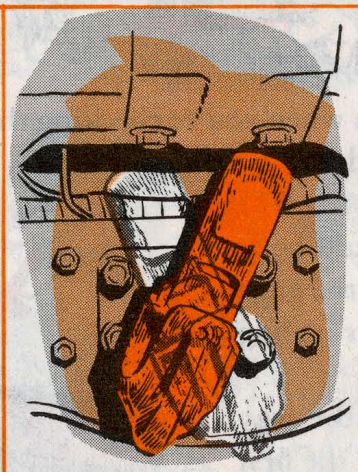
"Time" mated

Do you have one of the new M37B1, ¾-ton cargo trucks, purchased under Contracts DA-20-018-15711 and DA-20-018-17307?

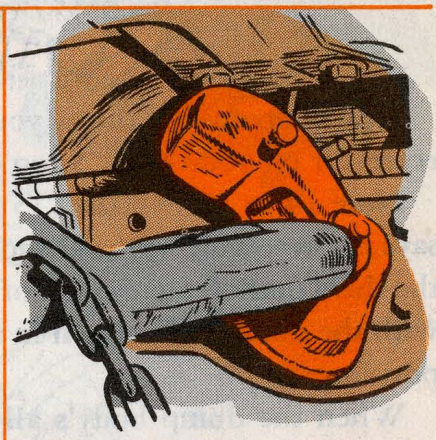
Try hookin' the M-101, ¾-ton trailer's lunette up to the B1's pintle . . .



. . . when the pintle's in the 12 o'clock position and you're in for a surprise . . . just can't be done.



But by merely moving the pintle to either the 10 o'clock or 2 o'clock positions,

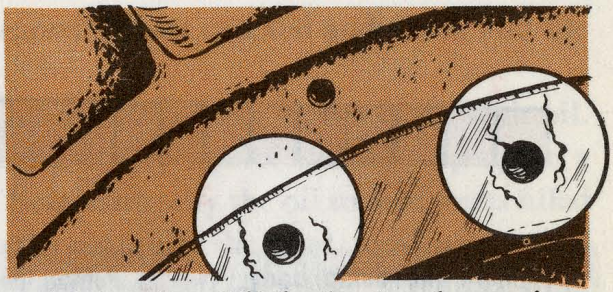


they'll hook up like the antlers on a coupla fightin' stag deer . . . even with a loaded trailer there's no sweat.

If the trailer is loaded and you've put the lunette eye over the lower jaw of the pintle, just raise up on the lunette slightly and the upper jaw can be swung down right easy. Once joined, the pintle'll automatically swing back to the 12 o'clock position.

When it hits the fan

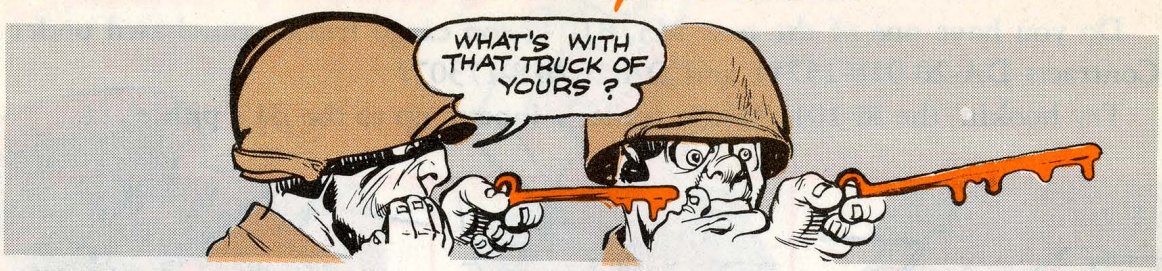
Tiny cracks around the rotor base hub of the oil cooler fans are danger signs for your M48A2 tanks and M51 heavy recovery vehicles.



To help spot these cracks, get yourself a copy of TB 9-278 (7 Apr 59) . . . it tells how you can find hard-to-see flaws and cracks by using a commercial dye check process. Eyeball all engines under serial number 2486—they're the engines that have the suspicious-acting fan rotors.

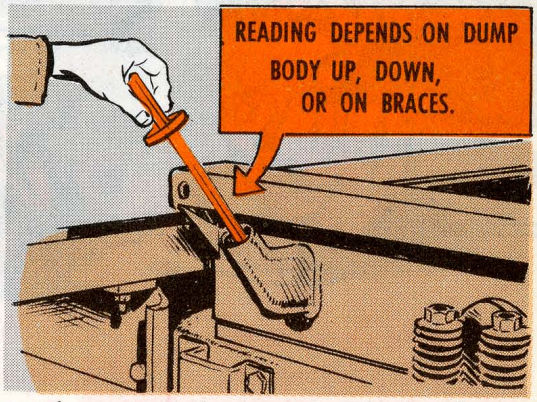
You'll want to change the fan rotor right quick, or sooner, if metal fatigue shows. Otherwise you're in for a rippin' time. There is a new fan rotor—FSN 2930-679-5742. But it won't be available until the present supply of fan rotors FSN 2930-294-0255 is used up. So you want to make darn sure your current oil cooler fans have been dye checked according to the info in the tech bulletin.

Watch those ups 'n' downs



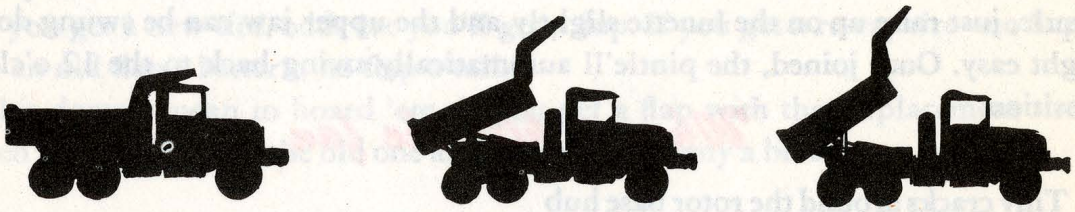
Ups 'n' downs can throw you when you're checking the oil level in the hydraulic reservoir on your M51, 5-ton dump trucks.

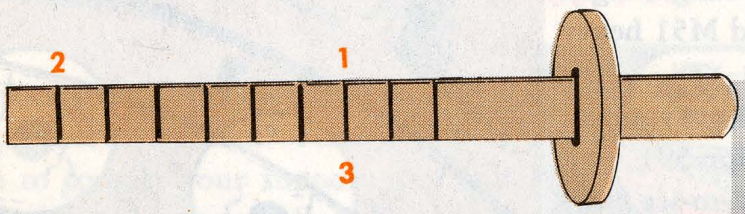
Note 14 in LO 9-8028 (15 Aug 57) says the reservoir oil level should be at the third mark from the **top** of the gage with the dump body **down** in traveling position.



When the dump body's all the way **up**, your reservoir oil level's at the first notch from the bottom of the gage. But Fig 114 in TM 9-8028 (13 Jun 55) says the oil level should be at the third notch from the top o' the gage with the dump body up on safety braces.

Sure sounds all mixed up. But that's the right info, and here's why:





1. With the dump body down, the oil's not under pressure—so it drains into the reservoir from the hydraulic lines. This is when you read the level at the third notch from the top of the gage.

2. Putting the control lever into POWER-UP and raising the dump body puts hydraulic pressure in the lines, taking oil outa the reservoir. This is when you read the level at the first marker from the bottom of the gage.

3. But when the body's raised and resting on the safety braces with the control lever in POWER-DOWN . . . the pressure's outa the lines and the oil drains back into the reservoir. This is when you read the level at the third mark from the top of the gage . . . same as you would when the body's in the down position.

COMEDY OF ERRORS

Believe it, this one happened: First, an L-19 got off with the oil filler cap not properly secured. The pilot saw the oil streaming out of the cowl and made a safe landing before any loss of oil pressure took place.

Good deal!

The ship was inspected, the engine cleaned off, oil checked and filled, and the plane resumed flying.

But, there was a hidden joker. The heater ducts were well soaked with oil. Nothing came of this for some time, until a different pilot had the ship up on a cold day. Naturally, he pulled on some heat, naturally the oil soaked ducts filled the cockpit with smoke and stink, and just as naturally the pilot, suddenly choked with smoke, pulled the "auf wiedersehen knob" and left, shouting "Fare thee well, Annabell" as he went.

Of course, he **should** have tried turning off the heater valve, like Section IV of his—1 says. But he got rattled and did the first thing that popped into his noggin.

Still, the price of new heater ducts and installation would have saved one Bird Dog, complete.

Wherefore, please to examine your heater ducts any time you have oil spillage or leakage from any cause. If they are soaked in oil, replace 'em.

ON YOUR SIOUX (H13)—

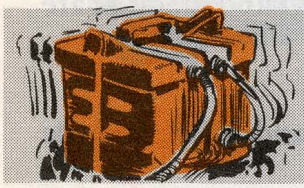
BE YOUR

Here are your points to check out on your Periodic Inspections. For further details, naturally, you see your dash 6 Handbook.

PILOT'S AND COPILOT'S SEATS: Broken, cracked dirty, loose.

SAFETY BELTS AND SHOULDER HARNESS: Metal parts bent, damaged or corroded. Straps dirty, frayed, cut. Latching parts loose, binding. Not weight-tested in last 12 months.

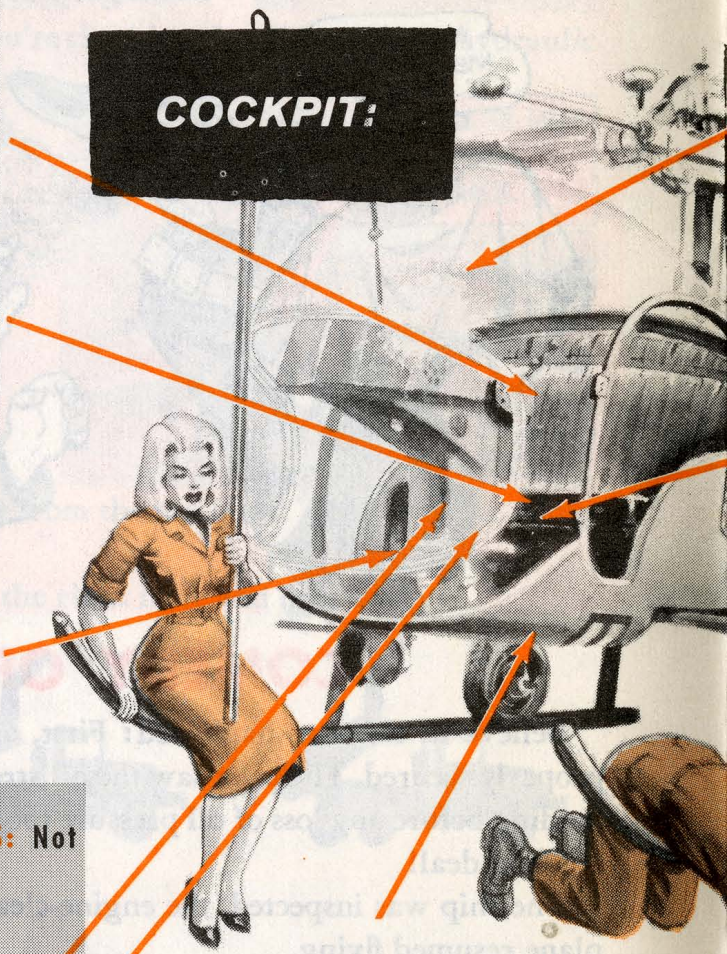
CONTROL STICKS, LEVERS AND PEDALS: Lost motion, binding, worn, cracked, loose.



RADIO COMPONENTS: Not securely mounted.

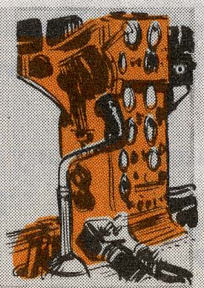
FLIGHT CONTROLS: Incorrect movement with respect to cockpit controls.

THROTTLE OVERRIDE: Not operational.



FIRE EXTINGUISHER: Seal broken, pressure lost, brackets loose or cracked, general condition bad.

INSTRUMENTS: Specified limit, operating range and slippage marks obliterated. Pressure indicating instruments or connections leaking. Compass liquid leaking, air bubbles.



SHOCK MOUNTS: Cracked, corroded, loose. Vibration absorbers rubber deteriorated or damaged, improperly bent, wire jumpers missing.

BE YOUR OWN INSPECTOR

Here are your points to check out on your Periodic Inspections. For further details, naturally, you see your dash 6 Handbook.

PILOT'S AND COPILOT'S SEATS: Broken, cracked dirty, loose.

SAFETY BELTS AND SHOULDER HARNESS: Metal parts bent, damaged or corroded. Straps dirty, frayed, cut. Latching parts loose, binding. Not weight-tested in last 12 months.

CONTROL STICKS, LEVERS AND PEDALS: Lost motion, binding, worn, cracked, loose.

RADIO COMPONENTS: Not securely mounted.

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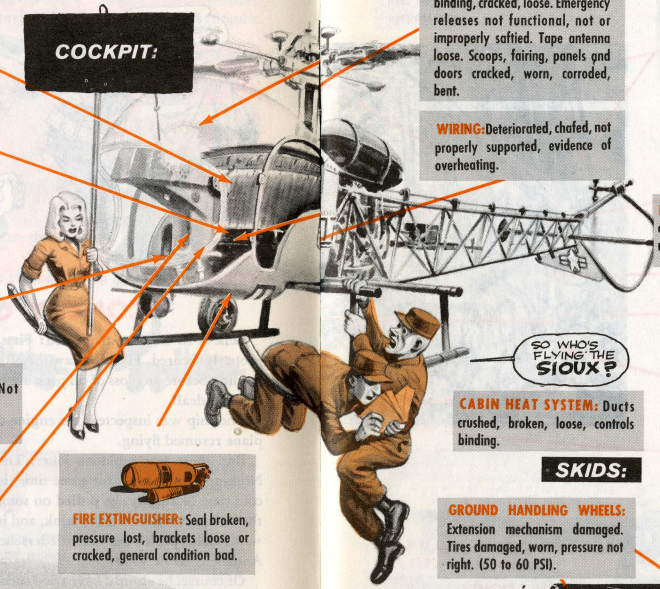


FIRE EXTINGUISHER: Seal broken, pressure lost, brackets loose or cracked, general condition bad.

GREENHOUSE: Cockpit enclosure cracked, crazed, loose. Snap vents binding, cracked, loose. Emergency releases not functional, not or improperly saftied. Tape antenna loose. Scoops, fairing, panels and doors cracked, worn, corroded, bent.

WIRING: Deteriorated, chafed, not properly supported, evidence of overheating.

CABIN HEAT SYSTEM: Ducts crushed, broken, loose, controls binding.

SKIDS:

GROUND HANDLING WHEELS: Extension mechanism damaged. Tires damaged, worn, pressure not right. (50 to 60 PSI).

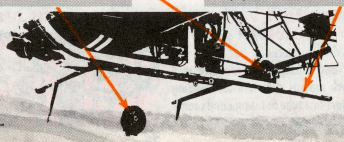
FRICTION LOCKS OR HYDRAULIC SERVOS: Do not have positive operation.

SHIELDING: Frayed, crimped, corroded, damaged. Connector plugs corroded, cracked, overheated, loose. Terminal strips, connections and bonding jumpers damaged, loose, corroded. Plastic tubing damaged, loose, draining improperly.

FIRST AID KIT: Seal broken, date of last inspection or serviceable tag missing.

CONTROL CABLES: Kinked, frayed. Turnbuckles not saftied. Pulleys worn, cracked. Bearings damaged, binding. Fairleads loose, out of line, binding. Inertia reel cables frayed. Control handles do not operate freely. Locks do not hold.

CROSS TUBES, SKID GEAR, SKID SHOES AND ATTACHING FITTINGS: Cracked, bent, corroded, worn, loose. (Look through the cross tubes, if you can't see through them, they're bent too far on the D, E, and G models).



OWN INSPECTOR

GREENHOUSE: Cockpit enclosure cracked, crazed, loose. Snap vents binding, cracked, loose. Emergency releases not functional, not or improperly saftied. Tape antenna loose. Scoops, fairing, panels and doors cracked, worn, corroded, bent.

WIRING: Deteriorated, chafed, not properly supported, evidence of overheating.

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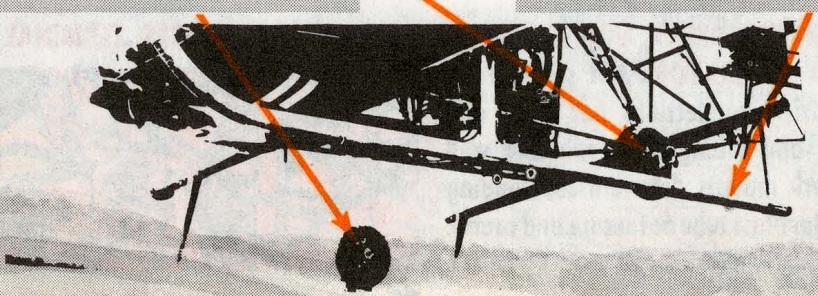
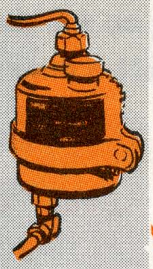
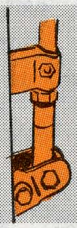


AIRFRAME: (Engine Section)

HYDRAULIC RESERVOIR: Cracked, leaking, improper fluid level, corroded, not secure. Vent filter leaking, corroded, not secure. Hydraulic filter leaking, corroded, not secure. Hydraulic lines, hose and fittings, leaking, chafed, damaged, not secure.

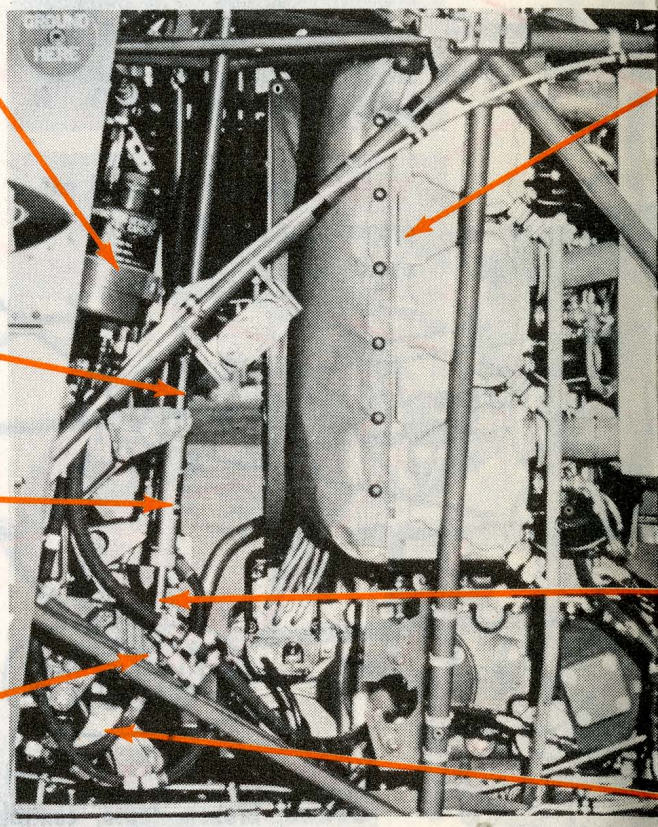


SUPPORT BRACKETS: Cracked, corroded, not secure.



ACTUATING CYLINDERS: Do not operate freely, leak, binding, corrosion.

BUSHINGS: Cracked, worn, corroded.



AIRFRAME: (Generator Regulator)

REVERSE CURRENT RELAY, VOLTAGE REGULATOR, JUNCTION BOXES, TERMINAL STRIPS AND GENERATOR: Not securely attached. Electrical connections not clean and tight. Boxes and tubing not clean and well drained. Shock mounts deteriorated. Bonding bad. Generator blast tube not secure and sound.

AIRFRAME: (Engine Section)

HYDRAULIC RESERVOIR: Cracked, leaking, improper fluid level, corroded, not secure. Vent filter leaking, corroded, not secure. Hydraulic filter leaking, corroded, not secure. Hydraulic lines, hose and fittings, leaking, chafed, damaged, not secure.

SUPPORT BRACKETS: Cracked, corroded, not secure.

ACTUATING CYLINDERS: Do not operate freely, leak, binding, corrosion.

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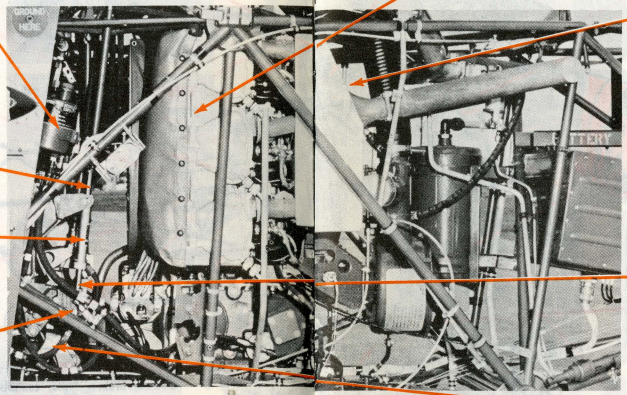

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ENGINE AND TRANSMISSION Leaks, loose or missing nuts, bolts, studs or clamps. Anything improperly saftied. Crankcase breather and line not clear and secure. Line chafed. Any vent and drain line not free. Any connection and anchorages not secure.

METAL DECALS: Not legible, loose.

HYDRAULIC BOOST SYSTEM CONTROL VALVE: Doesn't operate, leaks, not secure.

ACTUATING ROD: Doesn't operate, not secure.

PUSH-PULL TUBES AND BELL CRANKS: Cracked, corroded, loose.

MAIN ROTOR BLADES:

BLADE LEADING EDGES AND TRIM TABS: Cracked, damaged, loose.

BLADE ROOTS: Deteriorated, sealing damaged, plates warped, corroded, fittings loose.

BLADE PROTECTIVE COATING: Cracked, peeling. Area between outboard end of face plates and inboard edge of fibreglass coating, wood cracked, coating cracked, peeling.

ENGINE AND TRANSMISSION Leaks, loose or missing nuts, bolts, studs or clamps. Anything improperly saftied. Crankcase breather and line not clear and secure. Line chafed. Any vent and drain line not free. Any connection and anchorages not secure.

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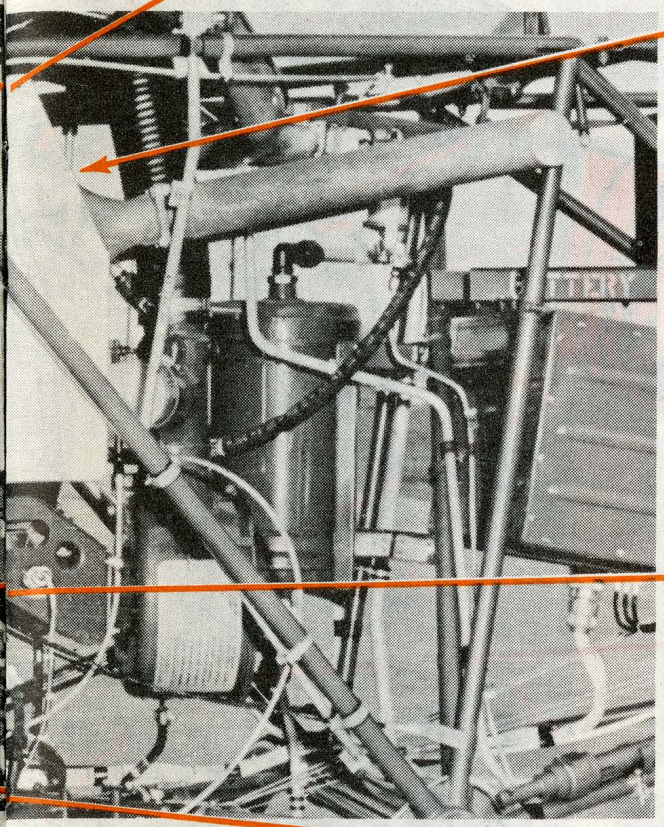

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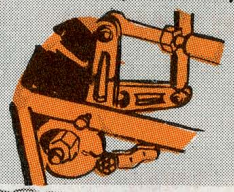

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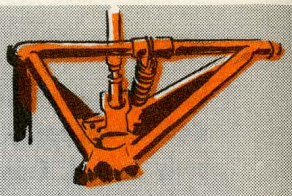
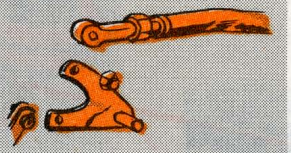
ENGINE MOUNT ASSEMBLY:

ENGINE MOUNTS: Cracked (check welded areas very carefully), corroded, out of line, loose. Lord mounts cracked, out of line.



ENGINE CONTROLS (BELL CRANKS, CONNECTING RODS, CABLES, PULLEYS, TURNBUCKLES, GUIDES, FAIRLEADS AND LINKS): Worn, cracked, out of line, improperly saftied.

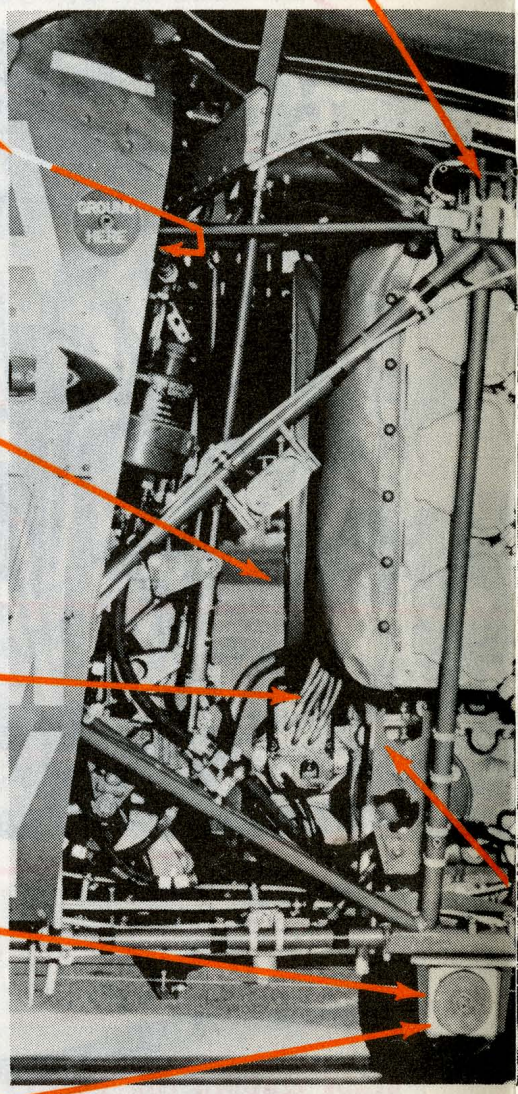


ENGINE COOLING: Fan loose, blades cracked, damaged, out of line. Belts too loose, too tight, cracked, frayed, dirty, oily or greasy. Pulleys out of line, worn. Fan shroud not OK. External mounting ring loose, properly indexed to fan support, improperly seated.

IGNITION HARNESS: Loose, brackets cracked, conduits damaged by chafing or overheating, terminals not tight, spark plugs loose, elbows not OK, leakage.

LOWER LORD MOUNTS (FORE AND AFT, LATERAL): Cracked, rubber deteriorated.

ENGINE SPRAG SYSTEM: Tubes and links distorted, loose, out of adjustment.



SAFETY CABLES: Frayed, loose, out of adjustment. (Tighten so pin will slip in, then loosen 6½ turns.)

ENGINE MOUNT ASSEMBLY:

ENGINE MOUNTS: Cracked (check welded areas very carefully), corroded, out of line, loose. Lord mounts cracked, out of line.

ENGINE CONTROLS (BELL CRANKS, CONNECTING RODS, CABLES, PULLEYS, TURNBUCKLES, GUIDES, FAIRLEADS AND LINKS): Worn, cracked, out of line, improperly saftied.

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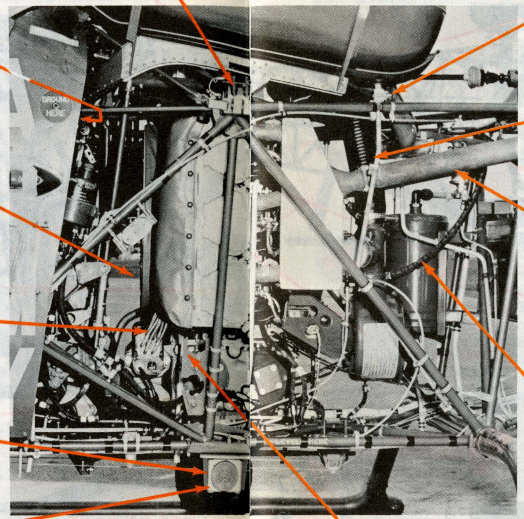

CONTROL CABLES: Kinked, frayed. Turnbuckles not saftied. Pulleys worn, cracked. Bearings damaged, binding. Fairleads loose, out of line, binding. Inertia reel cables frayed. Control handles do not operate freely. Locks do not hold.

FUEL SYSTEM: Leaks, damaged, corroded, loose. Controls binding. Transmitter covers improperly saftied. Connector plugs loose, corroded. Drain valves leaking. Tank support brackets and fire shields damaged, cracked, corroded, loose. Tank straps and pads out of line, corroded, loose. Turnbuckles loose. Safety wires missing.

AIR DUCTS (INSIDE AND OUT): Cracked, loose or missing clamps, bolts, rivets, screws or junk in openings. Ducts loose, flex tubing cracked, not clean, deteriorated. Carburetor air filter not clean, damaged, properly oiled (TM 1-1H-13C-2).

EXHAUST SYSTEM: Cracked, burned, loose. Manifold stud nuts missing, loose. (Torque 160-180 inch-pounds). Shroud cracked, chafed, burned, hot spots, clamps loose. Slip joints leaking excessively.

OIL SYSTEM: Leaks. Tubing: Dented, cracked, chafed. Hose connections cracked, cut. Hose clamps loose. Oil cooler damaged or clogged core, leaks, loose. Oil temperature regulator leaks.

CYLINDERS: Fins damaged. Hold down nuts loose. Air baffles loose, chafing. Push rod housings cracked, severely dented, leaking. Rocker boxes cracked, damaged. Covers loose, leaking.

ENGINE ACCESSORIES: Loose, damaged, chafed, deteriorated. Mounting brackets or clamps loose, cracked. Wires chafed.

CONTROL CABLES: Kinked, frayed. Turnbuckles not saftied. Pulleys worn, cracked. Bearings damaged, binding. Fairleads loose, out of line, binding. Inertia reel cables frayed. Control handles do not operate freely. Locks do not hold.

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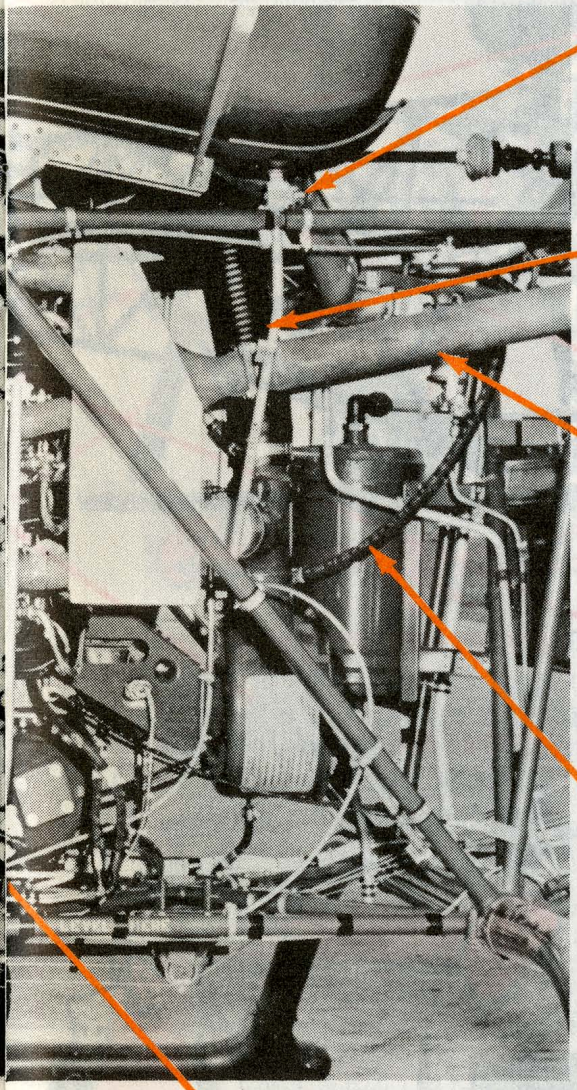

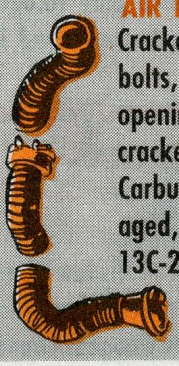

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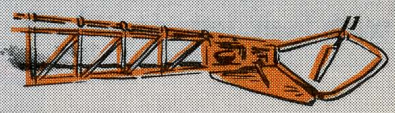
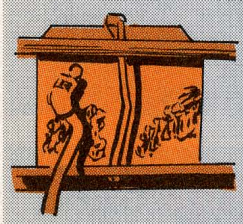
TAIL BOOM:

TAIL ROTOR SHAFTS: Damaged, any indications of a crack, scratched or blemished over 0.0002 inch deep, corroded. Bearing supports cracked. Caps loose. Bearings loose (inner race on the sleeve, outer race in the housing), rough (more than 0.005 inch side play). Fore-and-aft floating couplings worn, damaged, binding grease-locked. Dust covers and grease retainers damaged, deteriorated, loose. Universal joints cracked, too much play (0.020 inch Max.), corroded. Sprockets (on C and D models) worn.

FUSELAGE AND TAIL BOOM STRUCTURE TUBING AND FITTINGS: Cracked, bent, distorted, corroded, paint peeling or chipping. Rust or corrosion on underside of lower center section members (check by pinging with lightweight hammer). Cracked or deteriorated seats.

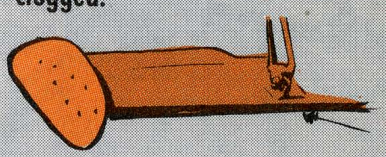




BATTERY: Cells low on electrolyte. Specific gravity low, high. Drains and vents clogged. Connectors and leads loose, corroded. Support structure loose, corroded, paint chipping. Cover and quick disconnect loose.

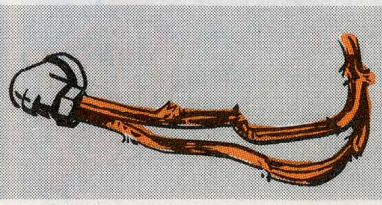
SYNCHRONIZED ELEVATOR, FORWARD CONTROL SUPPORT IDLER BRACKET, TORQUE ROD AND LEVER ASSEMBLY: Cracked, corroded, loose, binding.

VENTRAL FIN: Cracked. Fabric or aluminum deteriorated. Tubing damaged, loose. Drain holes clogged.



ELECTRICAL WIRING:

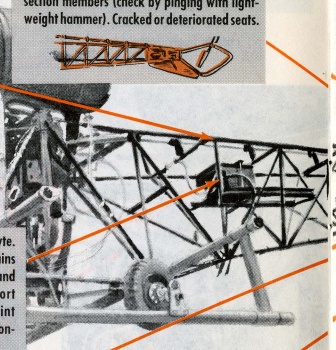
ALL WIRING: Damaged, chafed, deteriorated, loose, clamps not OK.



TAIL BOOM:

TAIL ROTOR SHAFTS: Damaged, any indications of a crack, scratched or blemished over 0.0002 inch deep, corroded. Bearing supports cracked. Caps loose. Bearings loose (inner race on the sleeve, outer race in the housing), rough (more than 0.005 inch side play). Fore-and-aft floating couplings worn, damaged, binding grease-locked. Dust covers and grease retainers damaged, deteriorated, loose. Universal joints cracked, too much play (0.020 inch Max.), corroded. Sprockets (on C and D models) worn.

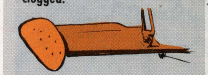
FUSELAGE AND TAIL BOOM STRUCTURE TUBING AND FITTINGS: Cracked, bent, distorted, corroded, paint peeling or chipping. Rust or corrosion on underside of lower center section members (check by pinging with lightweight hammer). Cracked or deteriorated seats.

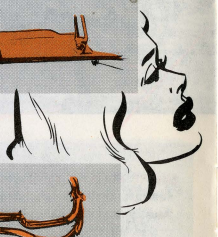


BATTERY: Cells low on electrolyte. Specific gravity low, high. Drains and vents clogged. Connectors and leads loose, corroded. Support structure loose, corroded, paint chipping. Cover and quick disconnect loose.

SYNCHRONIZED ELEVATOR, FORWARD CONTROL SUPPORT IDLER BRACKET, TORQUE ROD AND LEVER ASSEMBLY: Cracked, corroded, loose, binding.

VENTRAL FIN: Cracked. Fabric or aluminum deteriorated. Tubing damaged, loose. Drain holes clogged.





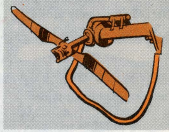
ELECTRICAL WIRING:

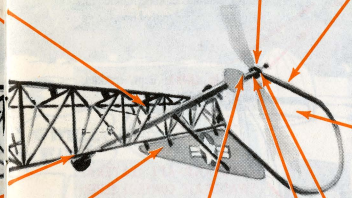
ALL WIRING: Damaged, chafed, deteriorated, loose, clamps not OK.

TAIL ROTOR:

TAIL ROTOR ASSEMBLY: Yoke and blade grips cracked, binding, loose, pitch change head binding, out of line, worn, improperly saftied.

GUARD: Cracked, dented, out of line, improper clearance from blades, corroded, loose.





BLADES: Distorted, out of line, any lifting or loosening. Check 3/32-in radius, flanges of leading edge at forward edge of reinforcement plates and entire root area for cracks. Metal blades scratched, bonding loose.

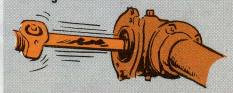
CUP WASHERS: Improper clearance. (0.002 to 0.004 inch for H-13G).

TAIL BOOM EXTENSION HOUSING: Cracked, dented, scratched. Yoke and flange cracked, scratched or dented. Boom extension brace bolt holes elongated. Tail rotor vibration isolators loose, cracked at attachment to tail boom, cracked at all. Tail boom extension bearing does not have radial play.

GEAR BOX: Cracked, damaged, leaking, loose.

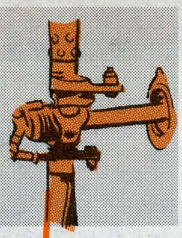
TAIL ROTOR AND SYNCHRONIZED ELEVATOR CABLES: Loose, frayed, improperly saftied, corroded. Pulleys and fairleads loose, binding, improper tension (T.R. 12-15 pounds, Stabilizer 24-30 pounds).

GEAR BOX SHAFT: Loose, any end play, backlash in gear, rough bearings. Shaft rotor attachment bolt hole elongated, cracked. Pitch change rod threads worn. Sirp bearings loose.

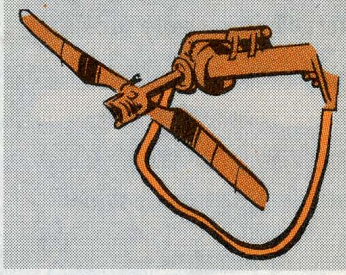


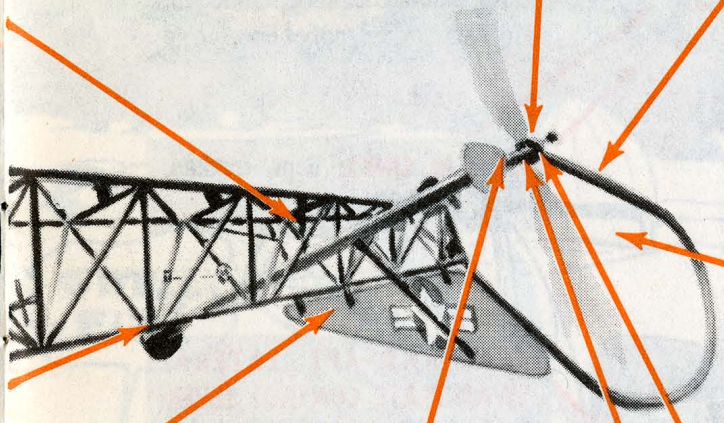
TAIL ROTOR:

TAIL ROTOR ASSEMBLY: Yoke and blade grips cracked, binding, loose, pitch change head binding, out of line, worn, improperly saftied.



GUARD: Cracked, dented, out of line, improper clearance from blades, corroded, loose.



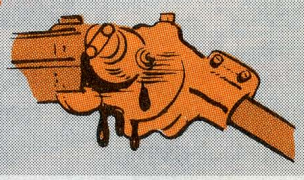


BLADES: Distorted, out of line, any lifting or loosening. Check $\frac{3}{32}$-in radius, flanges of leading edge at forward edge of reinforcement plates and entire root area for cracks. Metal blades scratched, bonding loose.

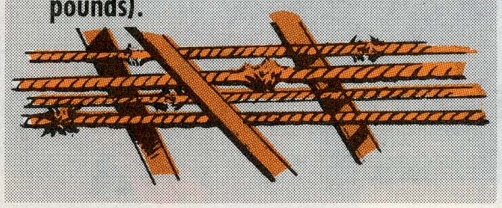
CUP WASHERS: Improper clearance. (0.002 to 0.004 inch for H-13G).

TAIL BOOM EXTENSION HOUSING: Cracked, dented, scratched. Yoke and flange cracked, scratched or dented. Boom extension brace bolt holes elongated. Tail rotor vibration isolators loose, cracked at attachment to tail boom, cracked at all. Tail boom extension bearing does not have radial play.

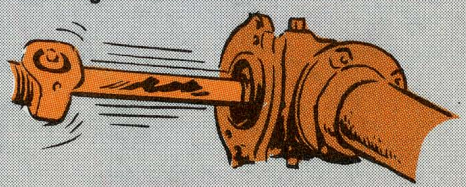
GEAR BOX: Cracked, damaged, leaking, loose.



TAIL ROTOR AND SYNCHRONIZED ELEVATOR CABLES: Loose, frayed, improperly saftied, corroded. Pulleys and fairleads loose, binding, improper tension (T.R. 12-15 pounds, Stabilizer 24-30 pounds).



GEAR BOX SHAFT: Loose, any end play, backlash in gear, rough bearings. Shaft rotor attachment bolt hole elongated, cracked. Pitch change rod threads worn. Sirp bearings loose.



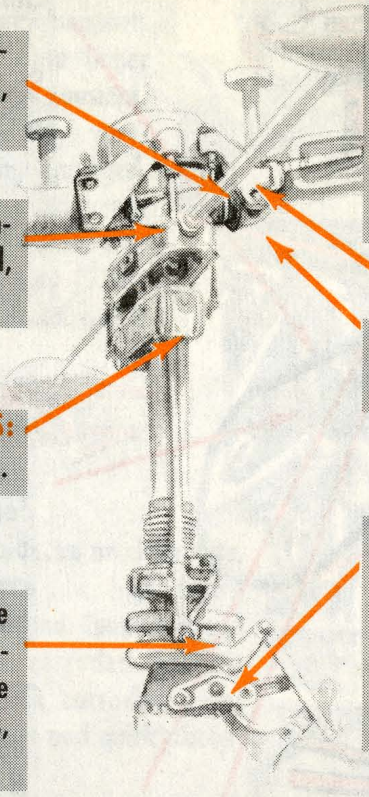
MAST AND CONTROLS:

STABILIZER BAR: Incorrect movement, cracked, improperly saftied, loose.

MAIN ROTOR HEAD: Worn, damaged, corroded, improperly saftied, binding.

STABILIZER BAR DAMPERS: Leaking, loose, improper timing.

SWASHPLATE: Endplay excessive (0.012 inch max). Check for security by pressing on swashplate support, no appreciable looseness, 1/32 inch max.



FLIGHT CONTROLS: Push-pull tubes, drum assemblies, bellcranks and connecting levers bent, cracked, worn, improperly saftied, loose. Bearings binding, damaged. Brackets cracked, out of line, loose.

VERTICAL LINKS: Bent, cracked, loose, binding.

FORE-AND-AFT LATERAL SWASHPLATE CONTROL LEVER: Cracked adjacent to bolt holes. (Use dye penetrant or 10 power glass.) Torque bolts more than finger tight.

ROTOR HUB ASSEMBLY:

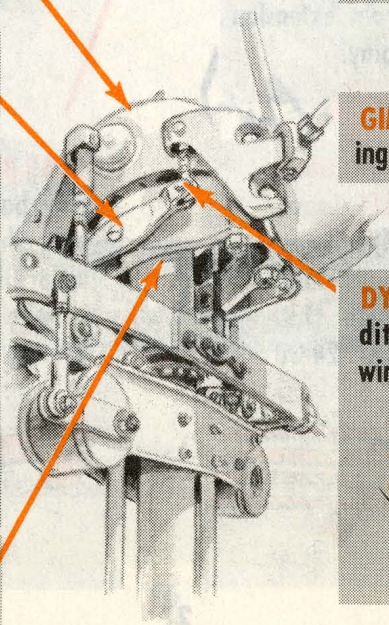
STATIC STOP: Permanent set, or other evidence of hard contact from gimbal rings.

ROTOR HUB ASSEMBLY SUPPORT: Damaged, loose.

BLADE GRIPS: Cracked, binding, loose.

DRAG BRACE ATTACHING BOLTS AND JAM NUTS: Cracked, damaged, loose.

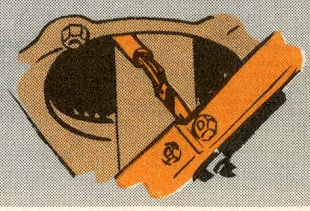
EQUALIZER BEAMS AND LINKS: Bent, cracked, damaged, loose.



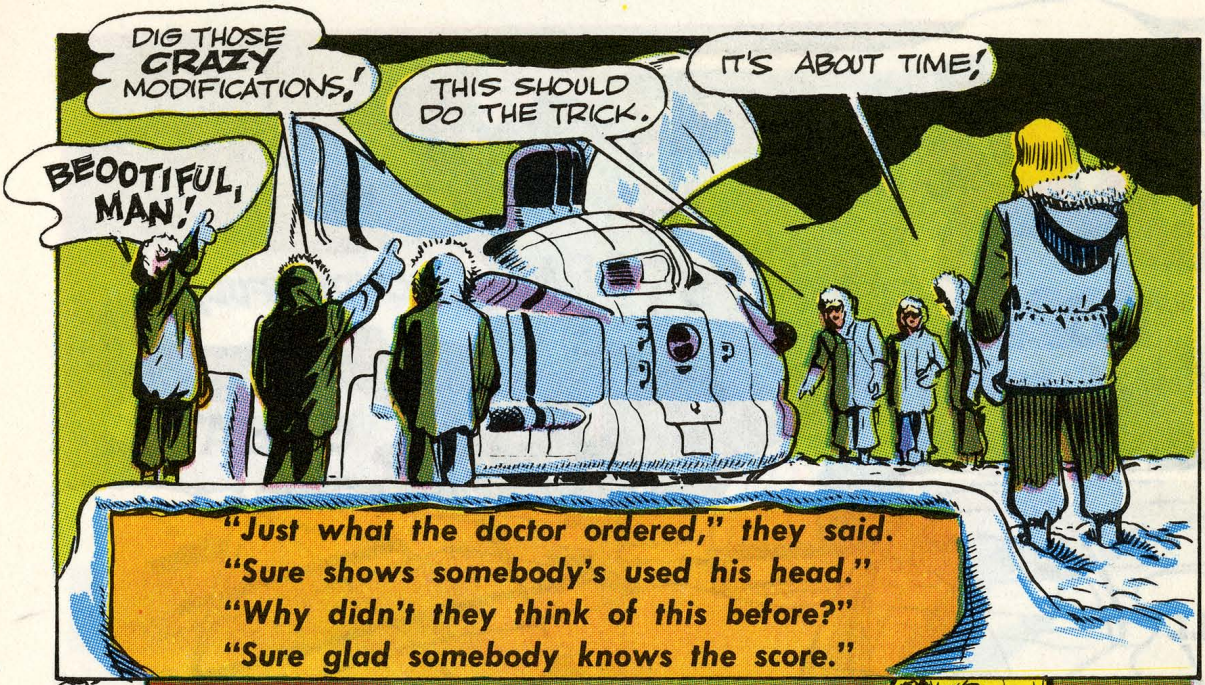
RETAINING NUT: Damaged, loose, tang lockwasher in bad condition, incorrect torque.

GIMBAL RING AND YOKE: Binding, surfaces damaged, loose.

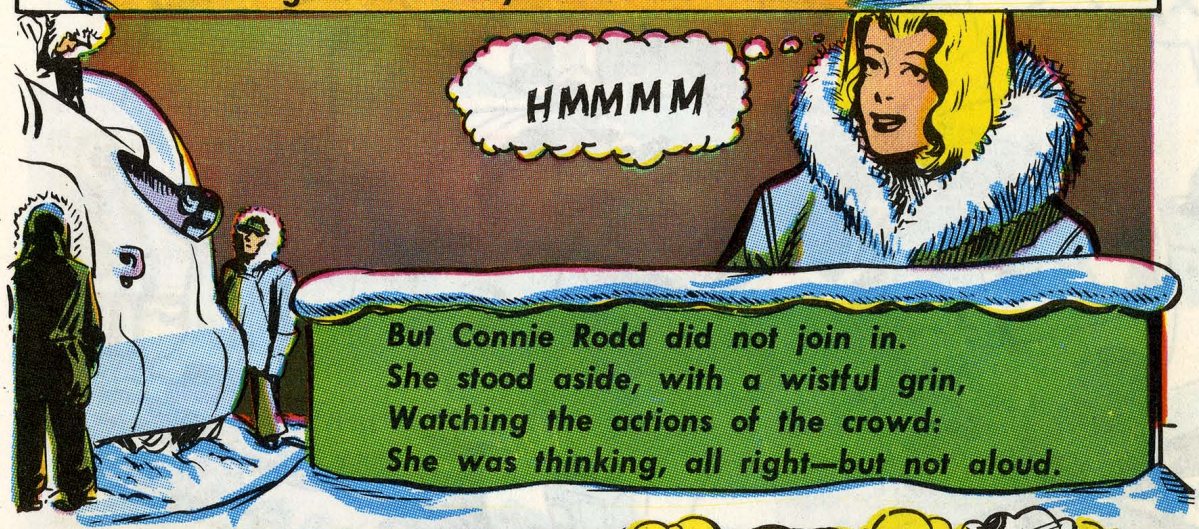
DYNAMIC STOP CABLES: Bad condition, not operational. Safety wire loop not intact.



JOE'S DOPE
SONG OF THE UNSUNG FORM
DA FORM 468 (UER)
WONDERFUL!
GREAT!
SWELL FIX!
Now . . . some of the boys were beating their gums
About improvement on the new "A1's"
They'd just received to replace the old,
Which're hard to start when the wind gets cold.



"Just what the doctor ordered," they said.
"Sure shows somebody's used his head."
"Why didn't they think of this before?"
"Sure glad somebody knows the score."



But Connie Rodd did not join in.
She stood aside, with a wistful grin,
Watching the actions of the crowd:
She was thinking, all right—but not aloud.

"It sure is funny about these Joes.
How long they've been griping, nobody knows,
About the weakness of the old-type stuff
That was hard to start when the weather was rough.

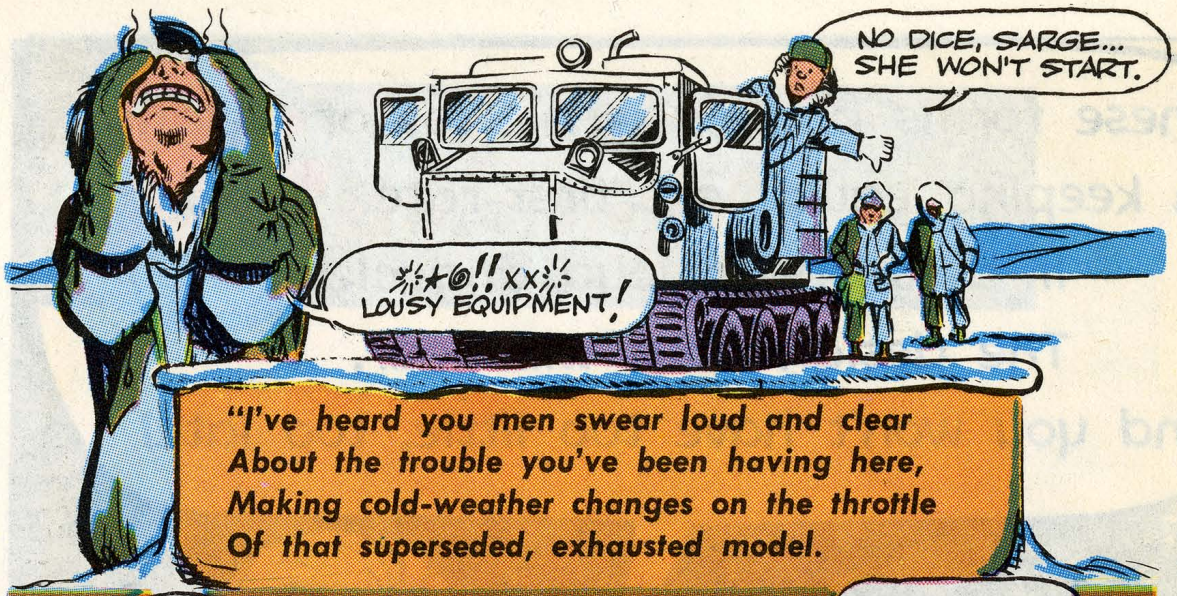
MUD
CLAY
SNOW
SAND
"Guess it just never occurred to them
That equipment design is more than whim;
That it needs the dope from many a Joe—
Stationed in mud, sand, clay and snow.

"There's never lived an engineer,
With brain so great and vision clear,
Who could without help anticipate
All conditions under which you'll operate.
THESE LINES FREEZE UP DURING TH' NIGHT.
WELL, I THINK THIS TYPE OF TRACKS NOT TOO HOT AROUND HERE!
WINDSHIELD DEFROSTER DOESN'T HAVE MUCH DEP IN THIS CLIMATE!
"Designing equipment to stand all weather
Requires research—it goes on forever.
They need your help, your guiding hand,
To make the equipment fit the land.

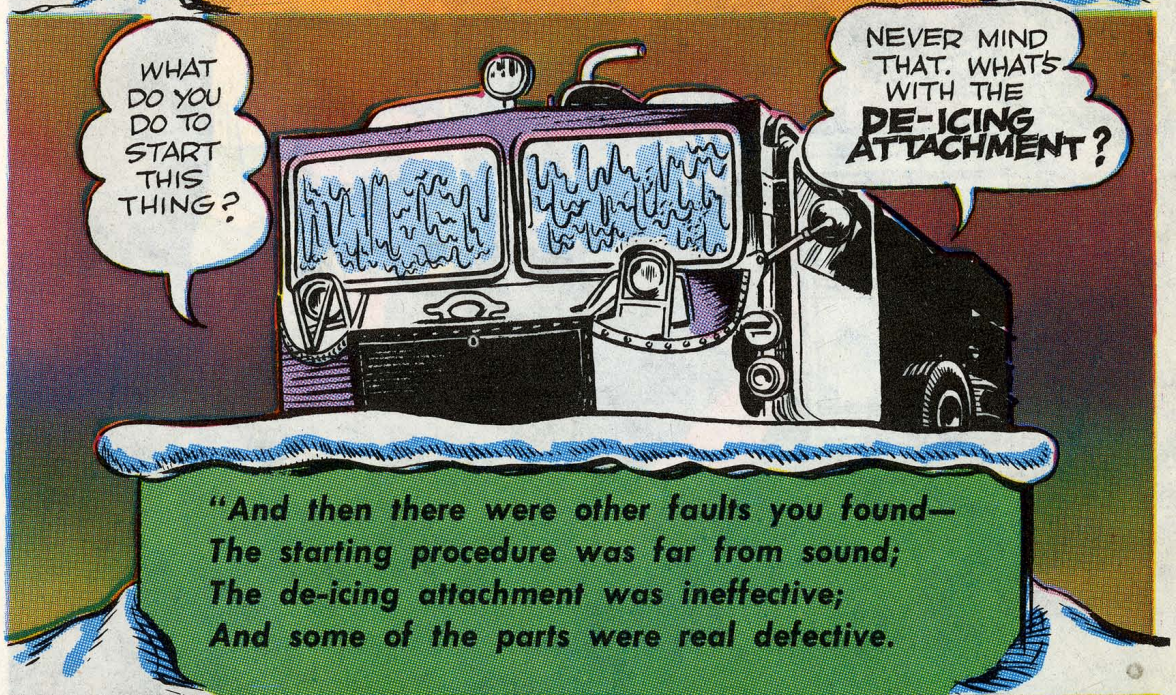
JOE'S
Dope Sheet
EXPEDITE
WE HAVE THE WORLD'S BEST EQ

JOE'S Dope Sheet
These forms pack a whole lot of weight
In keeping equipment first-rate.
If they speak loud and clear
The design boys will hear,
And you won't have too little, too late!
EXPEDITE
WE HAVE THE WORLD'S BEST EQUIPMENT ...Take care of it

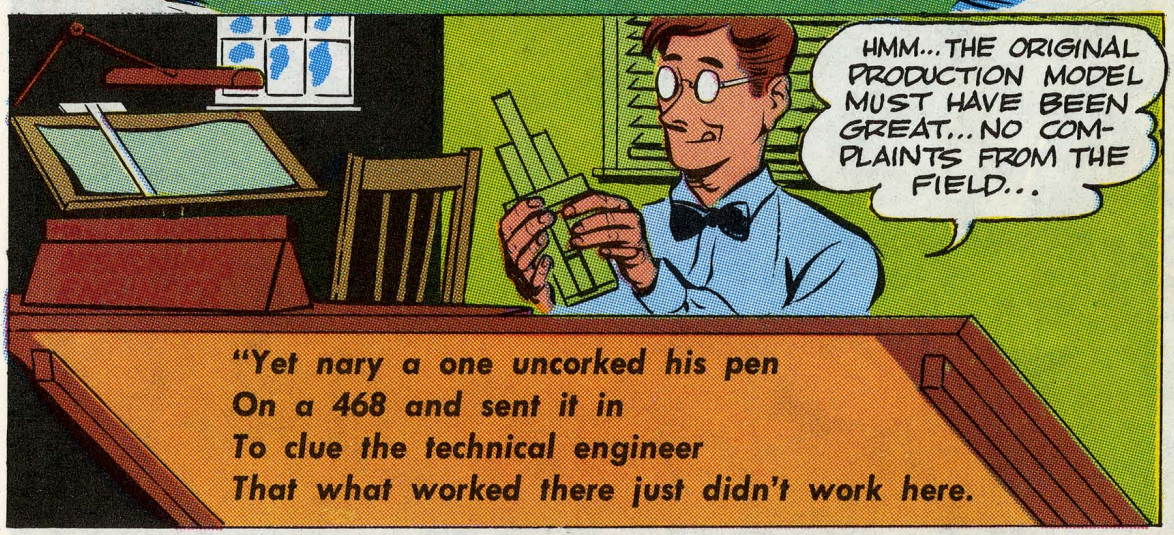
These forms pack a whole lot of weight
In keeping equipment first-rate.
If they speak loud and clear
The design boys will hear,
And you won't have too little, too late!
QUIPMENT ...Take care of it



"I've heard you men swear loud and clear
About the trouble you've been having here,
Making cold-weather changes on the throttle
Of that superseded, exhausted model.

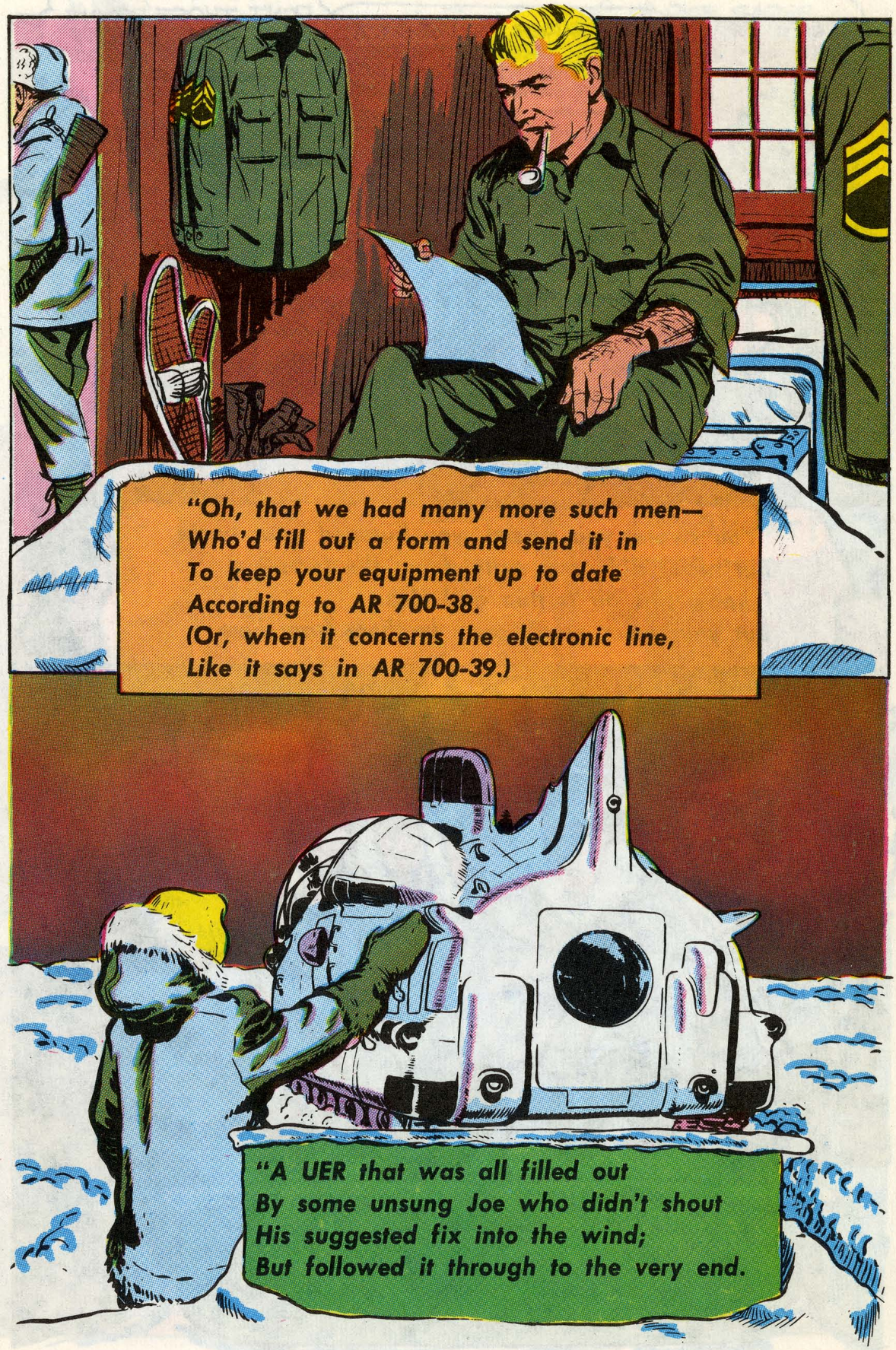


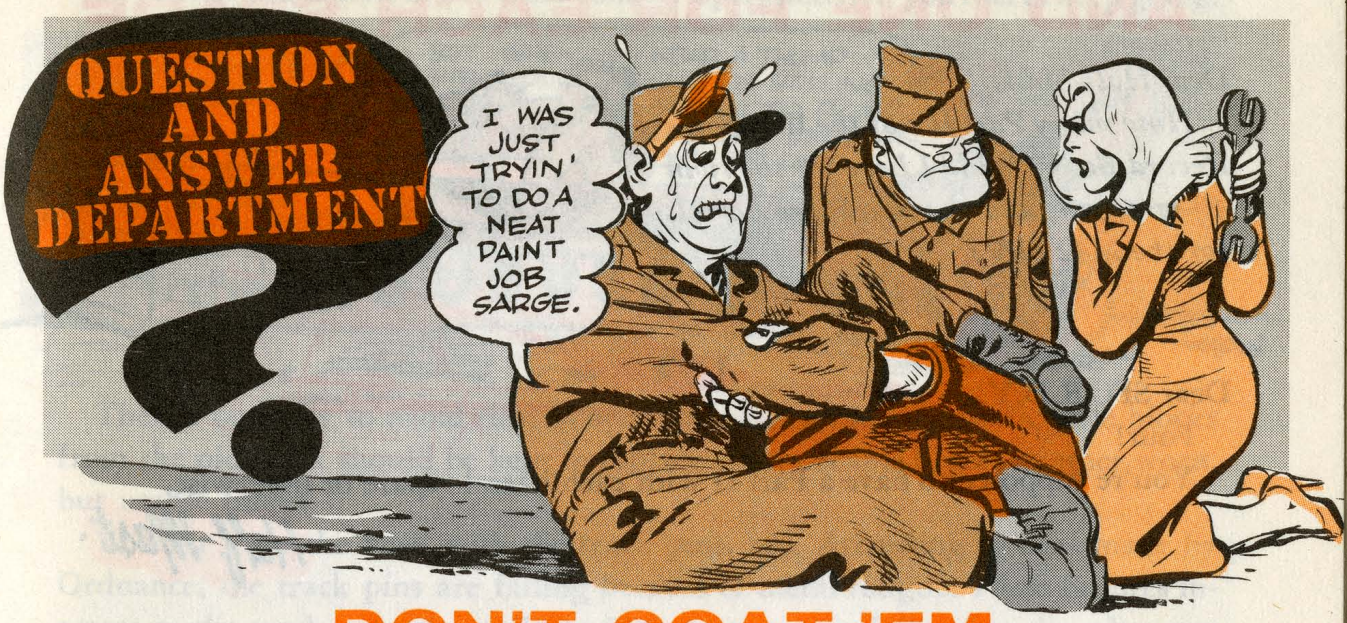
"And then there were other faults you found—
The starting procedure was far from sound;
The de-icing attachment was ineffective;
And some of the parts were real defective.



"Yet nary a one uncorked his pen
On a 468 and sent it in
To clue the technical engineer
That what worked there just didn't work here.

HEY, SARGE! WILLYA GIT A REPAIR CREW OUT HERE QUICK? THAT @%*!!@#*: THING WON'T START!
DON'T THOSE BRAINS BACK HOME KNOW HOW T'MAKE A GOOD VEHICLE FOR A CHANGE?
O.K. O.K. MUMBLE, MUMBLE, THOSE JERKS BACK IN TH' STATES!
"You swore, you cussed, you humped your backs,
But never did once write down the facts—
I know this air is thin and clear,
But your voice won't carry to there from here.
"But, now you men are gay...you see?
Your new "A1" is trouble-free.
But it's more than luck—much more by far—
Behind it all was a UER.


"Oh, that we had many more such men—
Who'd fill out a form and send it in
To keep your equipment up to date
According to AR 700-38.
(Or, when it concerns the electronic line,
Like it says in AR 700-39.)
"A UER that was all filled out
By some unsung Joe who didn't shout
His suggested fix into the wind;
But followed it through to the very end.



DON'T COAT 'EM

Dear Connie,

Our unit has a number of 5-gal water cans that need re-coating on the inside. TB QM 32 and para 138 of TM 10-270 say to use a glossy non-toxic, non-poisonous paint, preferably light cream or ivory in color.

What paint do we use?

Capt. P.R.C.

Dear Captain P.R.C.,

You won't need any, Captain. The word's just come through that painting the inside of 5-gal water cans is not authorized. TB QM 32 and para 138 of TM 10-270 are being rescinded.

Keep using the ones that have just minor scratches and pinpoint rust spots. They're OK. But, get rid of the ones that have larger areas. Turn in the ones that're no good. Just mark 'em unserviceable and non-repairable.

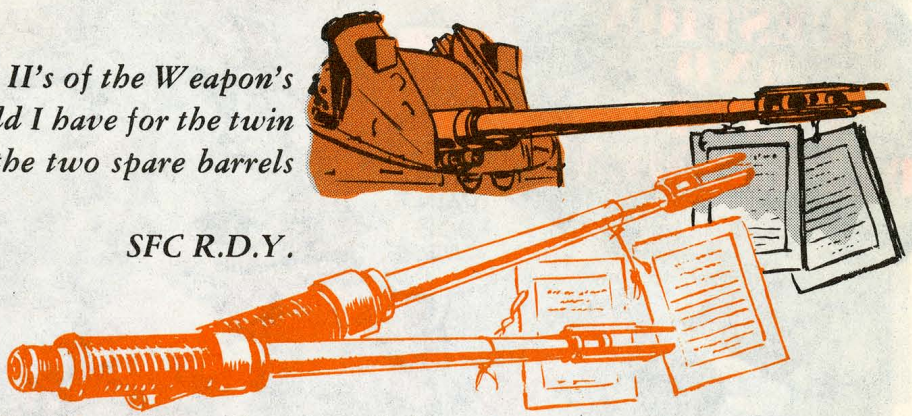
Connie

AND ONE FOR EACH SPARE

Dear Half-Mast,

How many Part II's of the Weapon's Record Book should I have for the twin 40-mm guns and the two spare barrels for the M42 SPV?

SFC R.D.Y.



Dear SFC R.D.Y.,

Four!

You're supposed to have a Part II with each barrel—spare or otherwise.

Half-Mast.

TANK TRACK TROUBLES

Dear Half-Mast,

We got troubles because our M48 tank tracks are badly worn. In fact, there is less than ¾ inch of rubber left on the chevron and, in most cases, just ½ inch left. Our pins are breaking in many places and in several instances the track pins have ripped out of their housing due to metal fatigue.

I maintain that at this time we should replace the complete track—not just individual blocks. I also say that track replacement of individual blocks in a badly worn track will cause strain on the suspension system—due to the uneven wear of the blocks. What's your opinion about this?

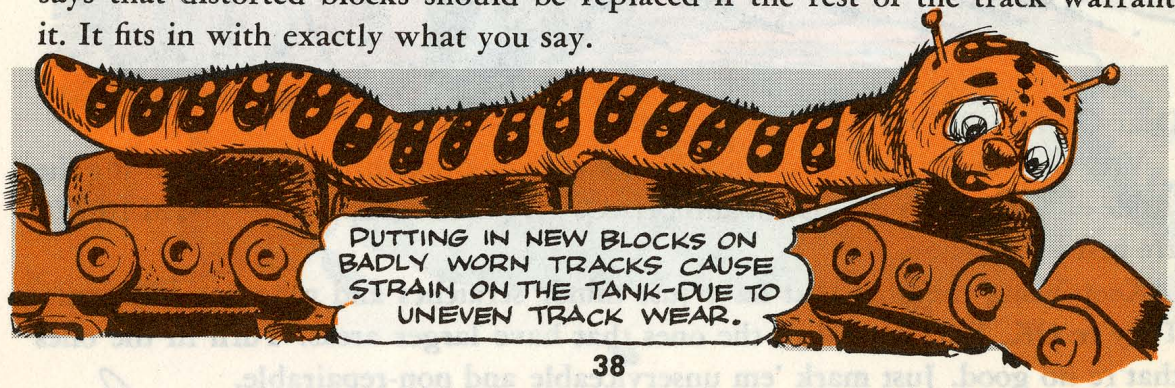
Pvt J. D. K.

Dear Private J. D. K.,

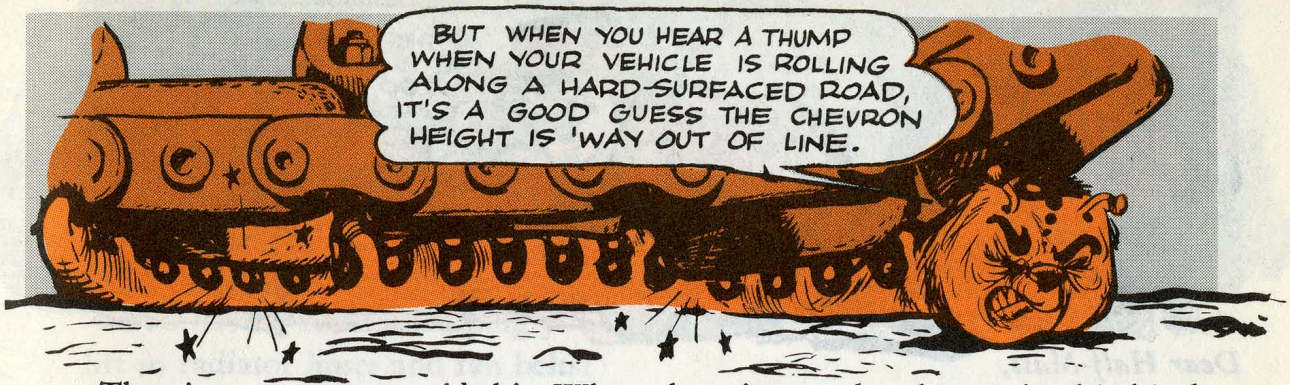
The key to this problem of replacing individual blocks in a badly worn track can be summed up in the new track TM 9-2630-200-14 (Aug 58). Paragraph f on page 39 of this TM says:

"REPLACE STRETCHED LINKS WHICH CHANGE THE PITCH OF THE TRACK BY MORE THAN 1/16 -IN."

It's a good piece of advice and so's this from the following paragraph which says that distorted blocks should be replaced if the rest of the track warrants it. It fits in with exactly what you say.



It wouldn't be as serious in a cross-country operation... if you had to keep going.

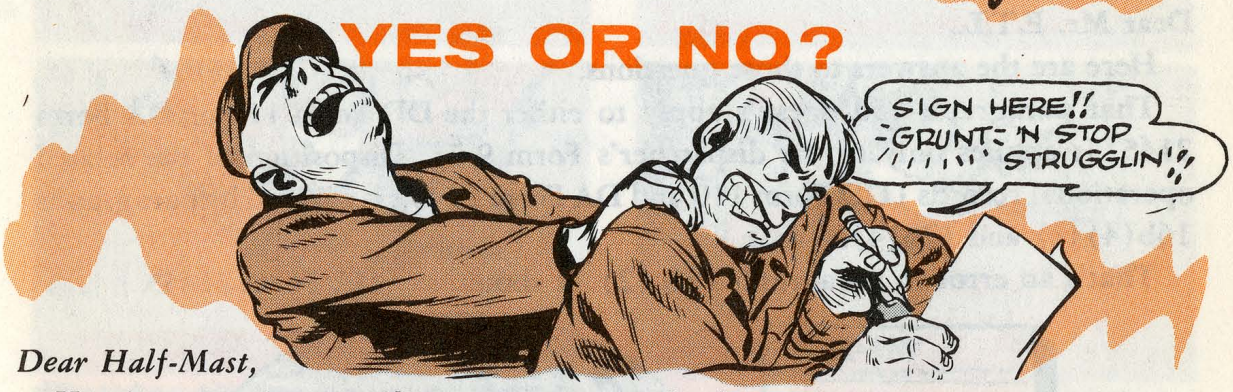


There's one way to avoid this. When changing tracks, the serviceable blocks from the old track should be kept to replace unserviceable blocks in other worn, but usable tracks.

You hit it on the head with the track pins, too. According to tests made by Ordnance, the track pins are failing because of metal fatigue. These failures increase as the track operation mileage increases . . . especially after the odometer hits 1500 miles.

These problems, along with a lot of other maintenance headaches, can be solved by applying common sense. And it sure looks like you got a lot of that stuff in your outfit.

Half-Mast



Dear Half-Mast,

Here's a question I need an answer to—is the dispatcher's signature needed on DA Form 2145, Tracked Vehicle and Equipment Operational Record? If so, where does it go?

Sgt E. S. O.

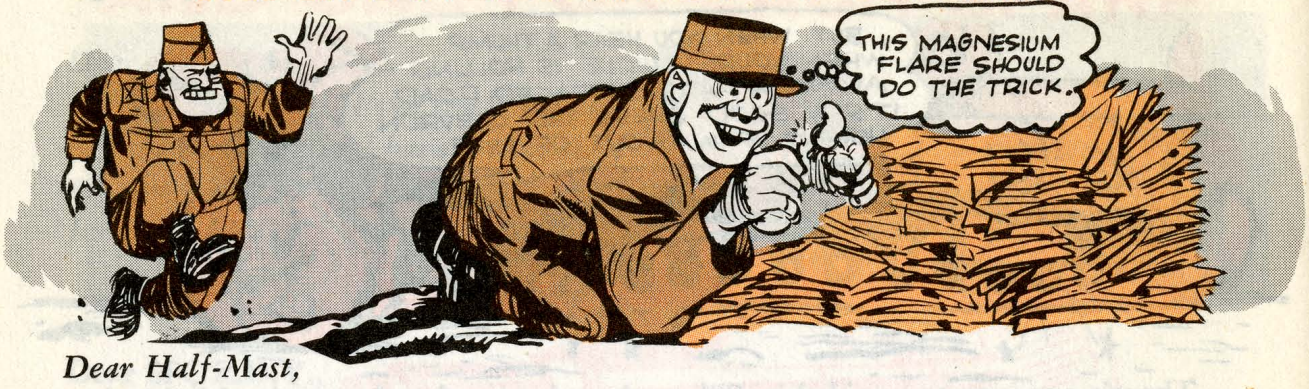
Dear Sgt E. S. O.,

TM 9-2810 doesn't require DA Form 2145 to be signed by the dispatcher.

But if your local commander feels it should be signed, then he will probably set up a local SOP. He could divide the DATE block and have the dispatcher sign in the lower half of it.

Half-Mast

MAINTENANCE FORMS



Dear Half-Mast,

Would like for you to set me straight on a few points in TM 9-2810 (1 Aug 58).

Paragraph 15 d states that related operational records will be filed for 60 days (two months) by the dispatcher then destroyed. Are these records DD Form 110 and DA Form 2145? Or just DD Form 110?

Paragraph 16 looks like it is for wheeled vehicles only (DD Form 110), and paragraph 17 looks like it is for tracked vehicles only (DA Form 2145). If so, what about paragraph 17 b (2)? Is the sixth line in that paragraph a misprint ***DD Form 110****—shouldn't it be DA Form 2145?*

What about paragraph 17 b (4)? Is there a maintenance section that can be destroyed, or is this a misprint?

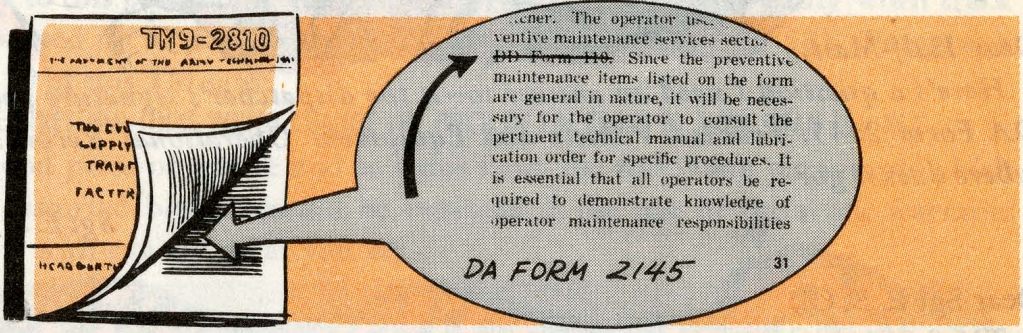
CWO E.T.L.

Dear Mr. E.T.L.,

Here are the answers to those questions.

That paragraph 15d doesn't apply to either the DD Form 110 or DA Form 2145. It applies only to the dispatcher's Form 9-75. Disposition of the related operational records (DD Form 110 and DA Form 2145) is covered by paragraphs 16b(4)(c) and 17b(4).

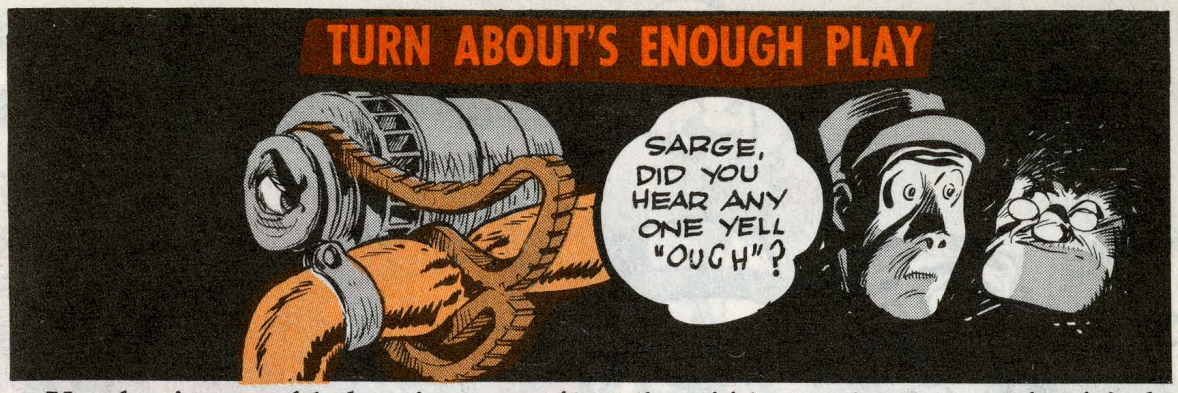
That's an error in paragraph 17b (2). It should say DA Form 2145.



That paragraph on page 32 is a little confusing since there's no separate maintenance section on the DA Form 2145. The dispatcher sends the whole form to the maintenance section after he's taken the info he needs from it. And the unit maintenance section will record the deficiencies in the current work file.

Half-Mast

TURN ABOUT'S ENOUGH PLAY

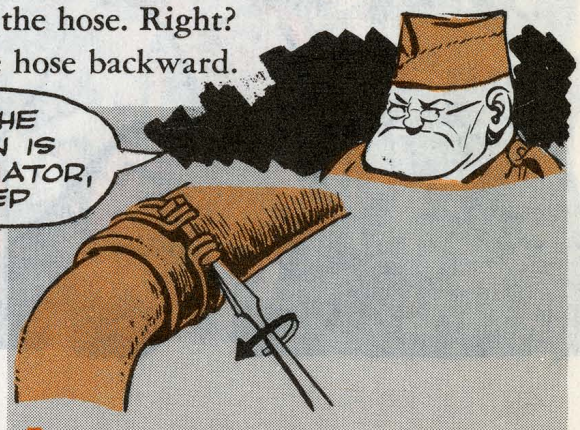


You having trouble keeping your 4000-lb, 144-in Service Caster S4024 fork-lift in radiator hoses and fan belts?

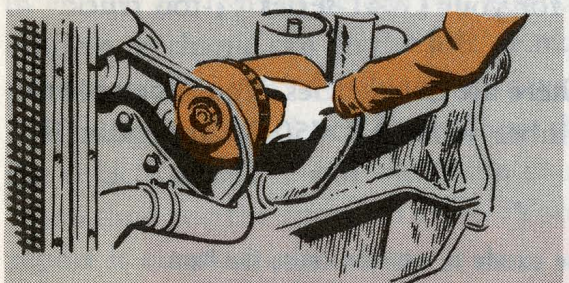
Know what you mean! Soon as you adjust and tighten the belt by lowering the generator, the belt starts chewing on the hose. Right?

Chances are someone has installed the hose backward.

1. Drain the radiator.



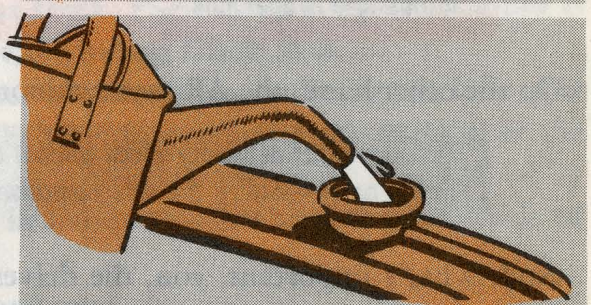
2. Loosen the clamps holding the hose.



3. Loosen the generator.

4. Turn the hose around; connect the longer straight section to the engine water pump and the other end to the radiator.

5. Put back the hose. (First, though, coat the hose end with Cement, Gasket, liquid type, Mil Spec C-10523 (Ord) FSN 8040-245-7031 (pint).



6. Re-tighten fan belt and fill up the radiator.

You'll gain about 5/8ths of an inch on this deal—enough to let the fan and the hose get along together.

Here's a Be-Your-Own-Inspector Guide for your G741-series ¾-ton truck. When using this guide, keep these in mind:

There are deficiencies—and then again, there are deficiencies. You'll be able to know which are more serious if you remember what AR 750-8, Appendix III says. It defines a major deficiency as

> "... one which would cause the item to be unsafe to operate, cause the item to function improperly, cause the item not to operate, or cause further damage if continued in operation."

On the other hand, the AR says a minor deficiency is

> "... any other deficiency which will not cause immediate or subsequent breakdown, nor jeopardize the safe operation of the item ..."

And, what's important, you, the driver, are responsible for recognizing deficiencies and doing something about 'em, regardless of what echelon of maintenance the repair work is in.

In other words, if you find something that makes your truck unsafe to operate or which can lead to real bad damage, you know it's a major deficiency and it's up

ON YOUR ¾-TON TRUCK

BE YOUR OWN INSPECTOR

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In other words, if you find something that makes your truck unsafe to operate or which can lead to real bad damage, you know it's a major deficiency and it's up

to you to get it fixed before you take the truck on the road. Maybe your second echelon mechanic can do the job, or maybe the truck has to go back to your support outfit, but you're the one who says, "This truck needs fixin'."

As long as a deficiency doesn't hurt the operation of your vehicle, doesn't make the vehicle unsafe to run and doesn't cut down on its performance, it can be fixed when time and the situation allow. You're covered on this sort of thing when you report it on your trip ticket.

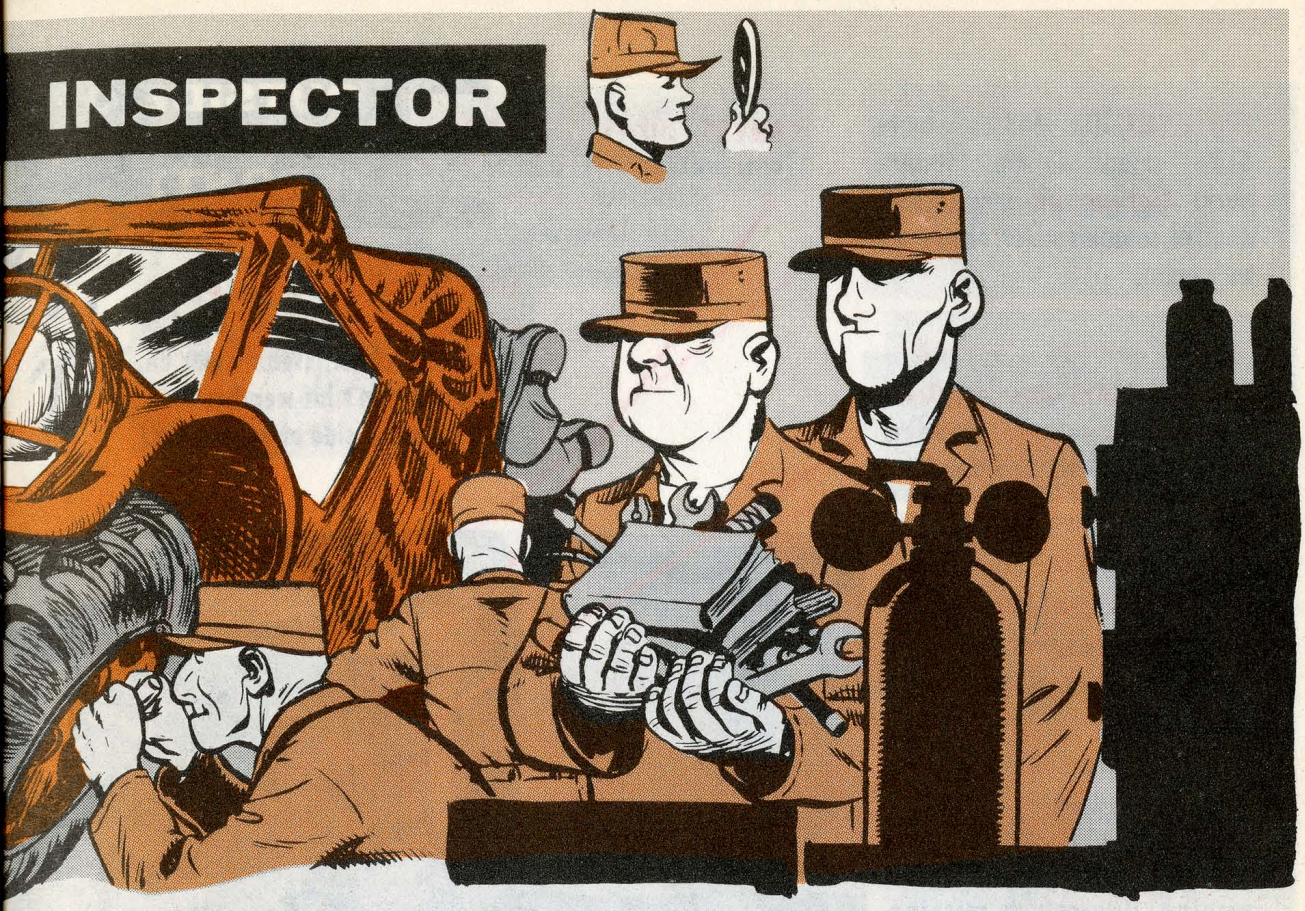
Watch that spit-and-polish replacement. If a part'll keep operating efficiently although it looks beat up, keep it on your truck. Parts cost money, and money is something which everybody likes to save, including Uncle Sam.

Your outfit's motor park is the best place to make these checks, so you'll be near your unit's mechanic in case you need help or in case he wants to go over the vehicle with you.

If you've got a wash rack, it'll come in handy for checking the underside of your vehicle.

The real serious deficiencies are in heavy type.

Most of these deficiencies are things which the driver should recognize and take care of himself. Those items marked (*) are deficiencies the second echelon mechanic can handle.



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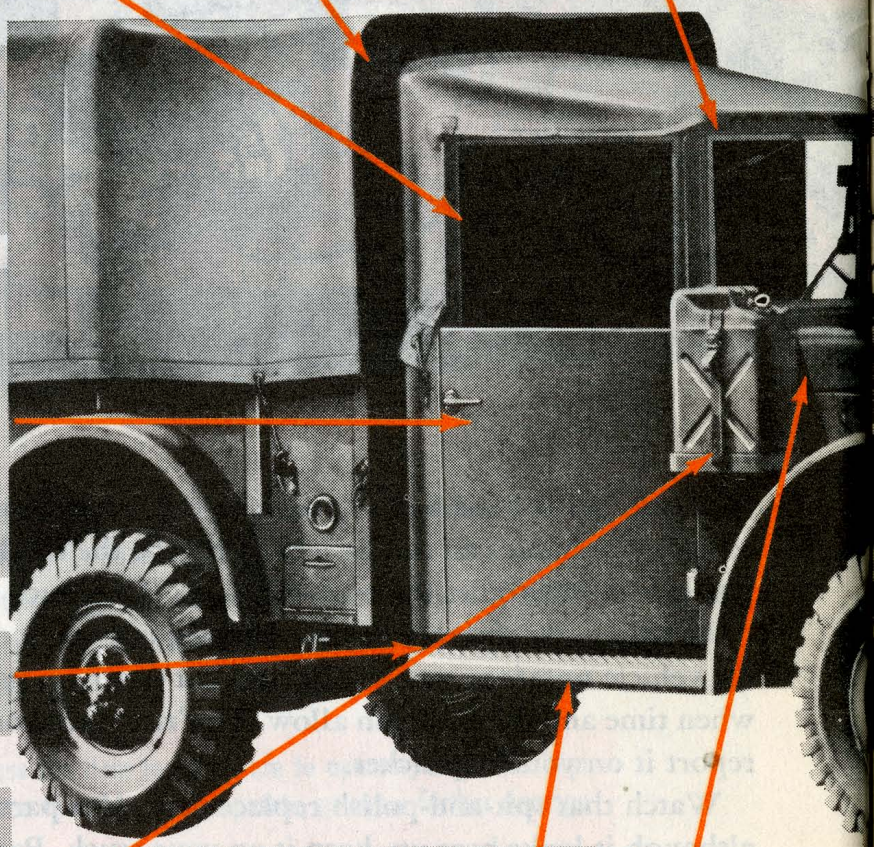
OUTSIDE OF VEHICLE (FRONT)

SPOTLIGHT—(On M43 ambulance & V41 telephone maintenance truck)—**Not working,** lens cracked, clouded, contains water, obstructed with paint.

CANVAS, BOWS & STRAPS — Torn, broken, dirty, missing.

WINDSHIELD WIPERS — Blades missing, arms broken, dead or hardened rubber. (With wiper on, blade shouldn't hit weather stripping on either side of windshield.)

WINDOW GLASS—Broken. Dangerously cracked. Clouded enough to block driver's vision.



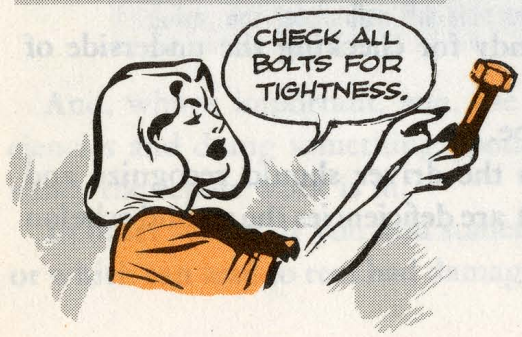
NATIONAL & UNIT MARKINGS— Missing, incorrect, not legible. (AR 746-2300-1 has all the correct dope on this.)

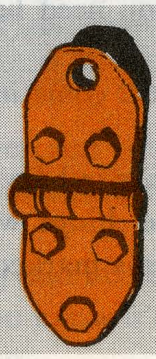
DOORS — Won't open and close properly, hinges loose, broken, missing. Door stops missing, broken, won't stop door in two positions. Weather stripping loose, worn, cracked, missing, shredded. Windows won't work.

RUNNING BOARDS—Bent, mounting bolts loose.

FUEL CANS, BRACKET & NOZZLE —(Normally only the bracket is present.) Mounting bolts loose, strap worn, frayed, mildewed, missing.

CAB & BODY BOLTS & MOUNTINGS—Missing, loose, broken.





HOOD—Hinges and fasteners **missing, broken,** worn, bent, loose, rusted, not lubricated (should be a thin coat of oil). Hood loose, squeaks when opened, dented, out of alinement. Safety fastener catch **won't work, missing, broken.**

OUTSIDE OF VEHICLE (FRONT)

SPOTLIGHT—(On M43 ambulance & V41 telephone maintenance truck)—**Not working,** lens cracked, clouded, contains water, obstructed with paint.

CANVAS, BOWS & STRAPS — Torn, broken, dirty, missing.

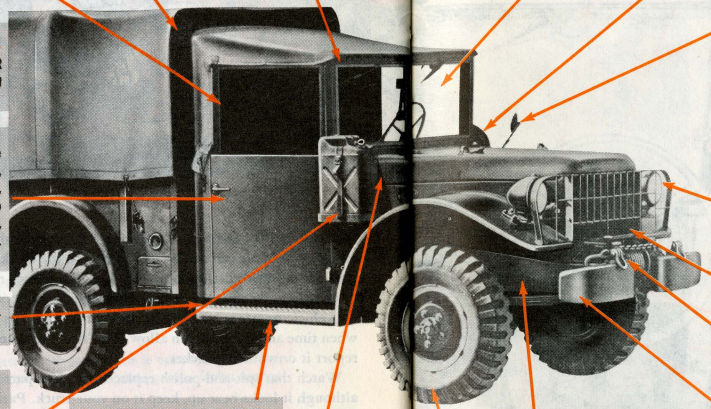
WINDSHIELD—Cracked on driver's side, clouded enough to block driver's vision. Weather stripping around windshield cracked, torn, coming loose.

SPARE WHEEL LOCKING STUD & NUT—(On M43 ambulance only)—Missing, loose, cracked.

WINDSHIELD WIPERS — Blades missing, arms broken, dead or hardened rubber. (With wiper on, blade shouldn't hit weather stripping on either side of windshield.)

MIRRORS—Missing, broken, clouded enough to block rear-view vision. Can't be adjusted for movement in every direction.

WINDOW GLASS—Broken. Dangerously cracked. Clouded enough to block driver's vision.



***SLAVE RECEPTACLE** — Contacts burned beyond use.

NATIONAL & UNIT MARKINGS— Missing, incorrect, not legible. (AR 746-2300-1 has all the correct dope on this.)

HEADLIGHTS & BLACKOUT LIGHTS — Not working, lenses **cracked,** clouded, dirty, contain water, obstructed with paint, blackout shield missing, not in place.

DOORS — Won't open and close properly, hinges loose, broken, missing. Door stops missing, broken, won't stop door in two positions. Weather stripping loose, worn, cracked, missing, shredded. Windows won't work.

GRILLE & BRUSHGUARD — Bent, loose.

RUNNING BOARDS —Bent, mounting bolts loose.

LIFTING SHACKLES — Missing, bent, stuck, cotter pin missing, loose, won't swivel.

FUEL CANS, BRACKET & NOZZLE —(Normally only the bracket is present.) Mounting bolts loose, strap worn, frayed, mildewed, missing.

CAB & BODY BOLTS & MOUNTINGS —Missing, loose, broken.

FRAME—Bent, cracked, side rails and cross members loose.

BUMPERS, FENDERS & SPLASH GUARDS — Bent, loose, cracked, rusty, missing bolts.

HOOD —Hinges and fasteners **missing, broken,** worn, bent, loose, rusted, not lubricated (should be a thin coat of oil). Hood loose, squeaks when opened, dented, out of alinement. Safety fastener catch **won't work, missing, broken.**

WHEELS—Tires cut, blistered. **Lug nuts missing, loose. Axle flange nuts missing, loose.** Rims bent. Two axle puller screws missing, broken, bent. Valve caps missing. Incorrect pressure (Tire pressure should be 40 PSI for cross country or highway driving; 15 PSI in mud, sand, snow.) **Lube or brake fluid leaking** (not a seep).

GENERAL VEHICLE APPEARANCE — Dirty, rust spots, body dents. Split seams (welds must be intact).

WINDSHIELD—Cracked on driver's side, clouded enough to block driver's vision. Weather stripping around windshield cracked, torn, coming loose.

SPARE WHEEL LOCKING STUD & NUT—(On M43 ambulance only)—Missing, loose, cracked.

MIRRORS—Missing, broken, clouded enough to block rear-view vision. Can't be adjusted for movement in every direction.

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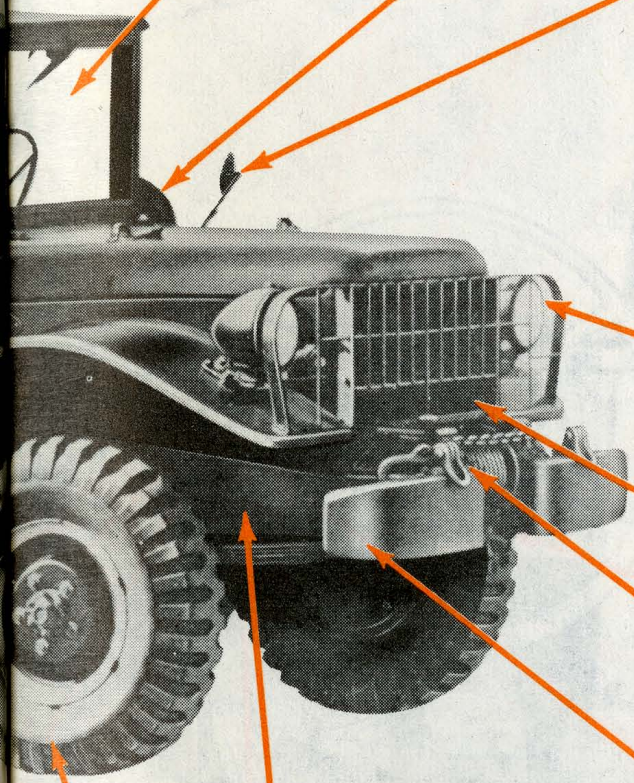

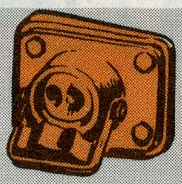

HEADLIGHTS & BLACKOUT LIGHTS — Not working, lenses **cracked,** clouded, dirty, contain water, obstructed with paint, blackout shield missing, not in place.

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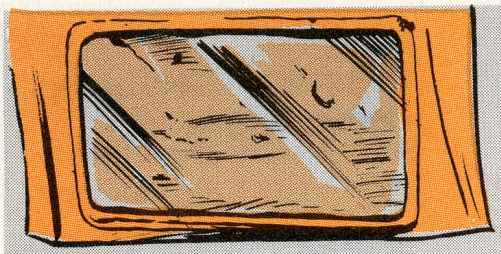
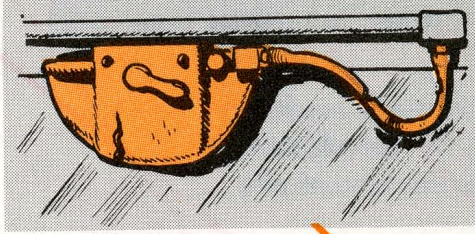
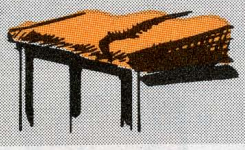


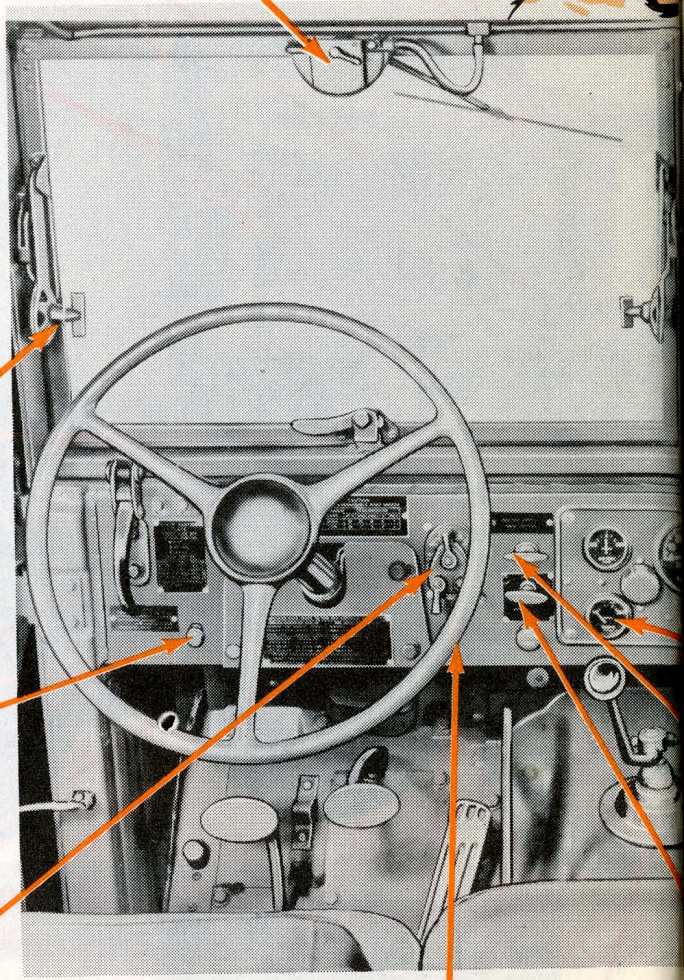
REAR WINDOW—Fogged enough to hamper vision, ripped.

WINDSHIELD WIPER CONTROL—Missing, won't work. Hold-down fasteners bent, broken, bolts loose. Seals cracked. Flexible hose cracked.



CAB TARP—Ropes frayed, canvas torn.

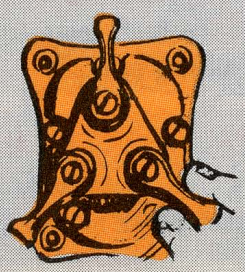




WINDSHIELD ADJUSTING ARM— Broken, bent. missing, won't work.

ENGINE PRIMER — Won't work. (Needed only in cold weather.)

LIGHT SWITCHES — Broken, won't work.



IGNITION SWITCH — Loose, broken.

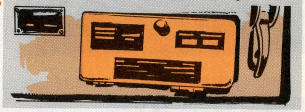
REAR WINDOW—Fogged enough to hamper vision, ripped.

WINDSHIELD WIPER CONTROL—Missing, won't work. Hold-down fasteners bent, broken, bolts loose. Seals cracked. Flexible hose cracked.

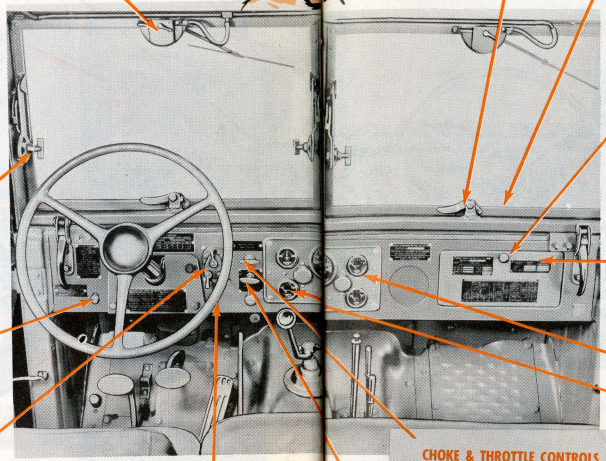
WINDSHIELD LOCK — Missing, rusty, won't work.

WINDSHIELD CHANNELS—Rusty, loose, welds cracked, broken. Retaining fasteners missing, loose, broken, bent.

GLOVE COMPARTMENT — Loose, latch broken, falls open, leaks water, dirty. FORMS & PUBLICATIONS (LO, TM, DD Form 518, SF 91)—Missing, unreadable, incorrect publications, DD Form 518 not filled out. Flywheel housing drain plug missing (for fording).



CAB TARP—Ropes frayed, canvas torn.



WINDSHIELD ADJUSTING ARM—Broken, bent. missing, won't work.

DATA & CAUTION PLATES — Not readable, missing, painted over.

ENGINE PRIMER — Won't work. (Needed only in cold weather.)

INSTRUMENTS — Not working, lenses broken, cracked, clouded.

LIGHT SWITCHES — Broken, won't work.

IGNITION SWITCH — Loose, **broken.**

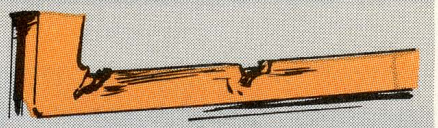
CHOKE & THROTTLE CONTROLS — Missing, loose, **won't work.**

FORDING VALVE HANDLE — Broken, does not operate.

WATER TEMPERATURE GAGE — Lens cracked, dirty, clouded. **Doesn't work right** (temperature should read between 160°F and 180°F when engine's warmed up).

WINDSHIELD LOCK — Missing, rusty, **won't work.**

WINDSHIELD CHANNELS — Rusty, loose, welds cracked, broken. Retaining fasteners missing, loose, broken, bent.



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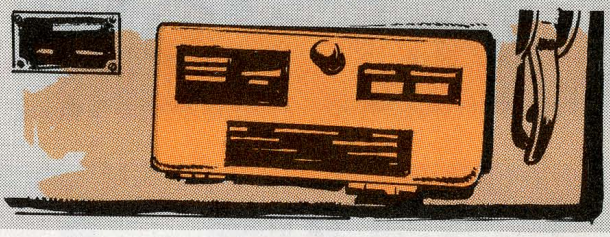
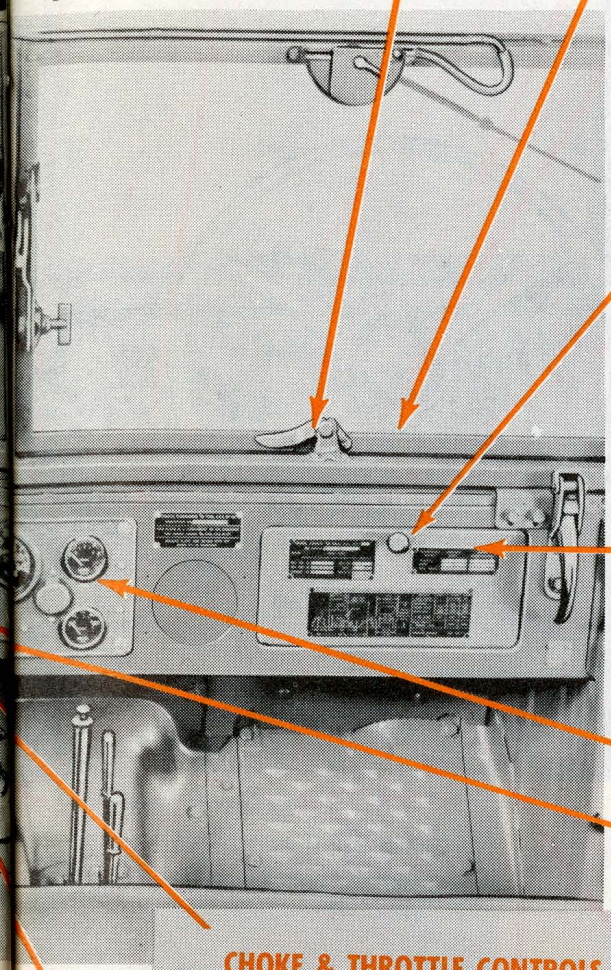
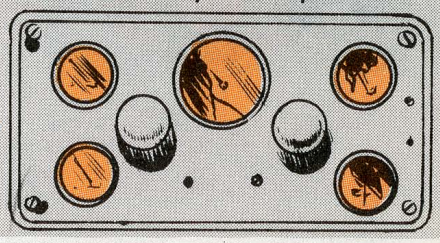


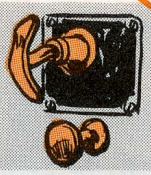


DATA & CAUTION PLATES — Not readable, missing, painted over.

INSTRUMENTS — Not working, lenses broken, cracked, clouded.



CHOKE & THROTTLE CONTROLS — Missing, loose, **won't work.**



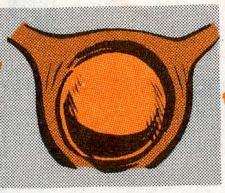
WATER TEMPERATURE GAGE — Lens cracked, dirty, clouded. **Doesn't work right** (temperature should read between 160°F and 180°F when engine's warmed up).

FORDING VALVE HANDLE — Broken, does not operate.

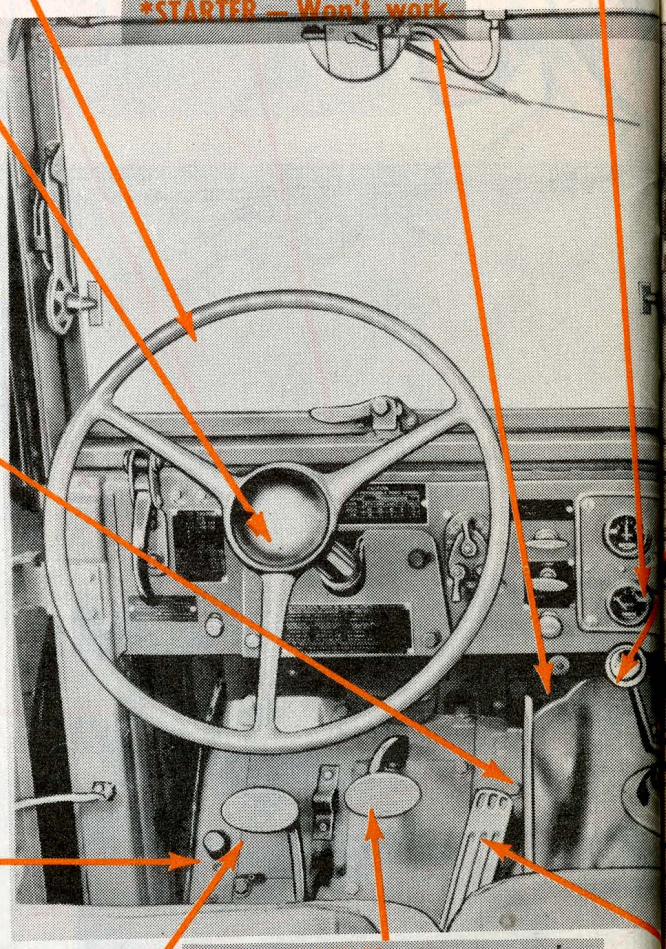
STEERING WHEEL—Bent, cracked, mounting loose in cab or frame, excessive play.

HEADLIGHT HIGH BEAM INDICATOR LIGHT — Missing. with upper beam lights on doesn't work. Obscured with paint.

HORN BUTTON — Won't work, loose.



***STARTER — Won't work.**

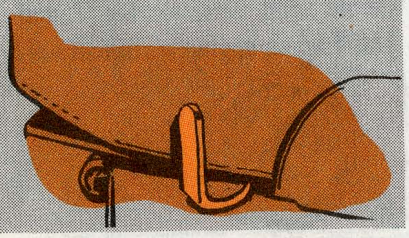


POWER TAKEOFF SHIFT LEVER— Stuck, loose, bent.

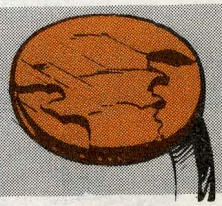
DIMMER SWITCH — Broken, loose, delay between high and low beam, light on dash won't work.

***BRAKE PEDAL** — Spongy, grabs, improper adjustment (travel should be between ¾ to 1 inch).

DRIVER'S SEAT REGULATOR LEVER —Won't work.



***CLUTCH** — Improper free play (should travel free 1 inch) **grabs, chatters, slips,** parts missing, loose.



STEERING WHEEL—Bent, cracked, mounting loose in cab or frame, excessive play.

HEADLIGHT HIGH BEAM INDICATOR LIGHT — Missing. with upper beam lights on doesn't work. Obscured with paint.

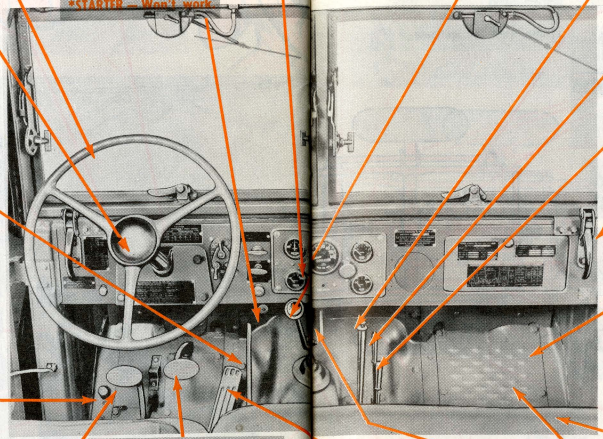
TRANSMISSION GEARSHIFT LEVER — Stuck, loose, bent, knob missing, boot torn.

PARKING BRAKE — Won't work, loose, broken.

***Not adjusted right.**

HORN BUTTON — Won't work, loose.

***STARTER — Won't work.**



TRANSFER SHIFT CONTROL LEVER — Stuck, loose, bent, knob missing. (Check while driving.)

TRANSFER DECLUTCH CONTROL LEVER — Stuck, loose, bent, knob missing. (Check while driving.)

POWER TAKEOFF SHIFT LEVER— Stuck, loose, bent.

DOORS—Gaskets and seals frayed, cracked, missing. Plates missing, loose.

FLOORBOARDS—Bent, loose, bolts missing.

DIMMER SWITCH — Broken, loose, delay between high and low beam, light on dash won't work.

SEATS — Cushions torn, missing, seat regulator knob bent, broken, springs missing, channels loose, hinge plates loose.

***BRAKE PEDAL** — Spongy, grabs, improper adjustment (travel should be between ¾ to 1 inch).

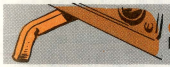
ACCELERATOR PEDAL — Sticks, loose, boot missing or torn.

MASTER CYLINDER — Leaks, improper level (brake fluid should be ¾ inch below top of filter plug opening).

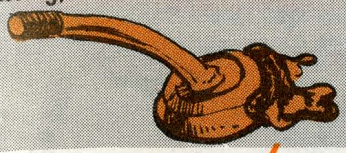
DRIVER'S SEAT REGULATOR LEVER —Won't work.

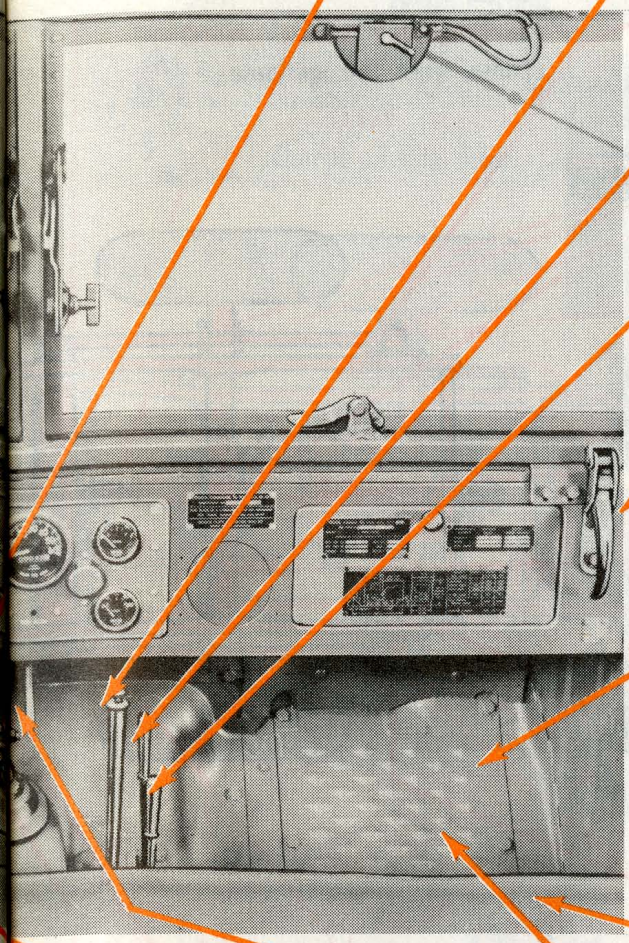
***CLUTCH** — Improper free play (should travel free 1 inch) **grabs, chatters, slips,** parts missing, loose.

COWL VENT HANDLE — Broken, loose.



TRANSMISSION GEARSHIFT LEVER—Stuck, loose, bent, knob missing, boot torn.



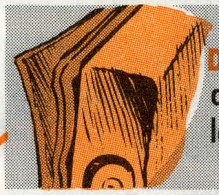


PARKING BRAKE—Won't work, loose, broken.

***Not adjusted right.**

TRANSFER SHIFT CONTROL LEVER—Stuck, loose, bent, knob missing. (Check while driving.)

TRANSFER DECLUTCH CONTROL LEVER—Stuck, loose, bent, knob missing. (Check while driving.)

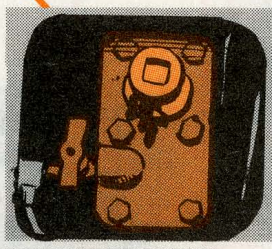


DOORS—Gaskets and seals frayed, cracked, missing. Plates missing, loose.

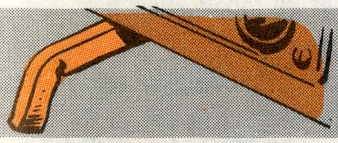
FLOORBOARDS—Bent, loose, bolts missing.

SEATS — Cushions torn, missing, seat regulator knob bent, broken, springs missing, channels loose, hinge plates loose.

ACCELERATOR PEDAL — Sticks, loose, boot missing or torn.



MASTER CYLINDER — Leaks, improper level (brake fluid should be ¾ inch below top of filter plug opening).



COWL VENT HANDLE — Broken, loose.

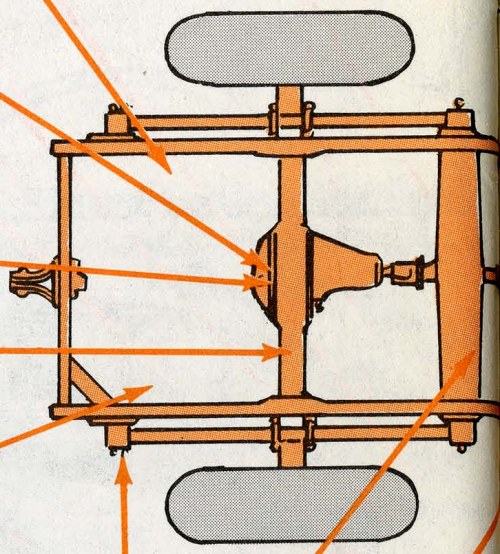
UNDERNEATH VEHICLE

FUEL TANK — Leaking, loose, bent, dented. Gas level too high (must be at least 2 inches below top of tank). Outside of tank dirty, rusted needs paint. **Fuel strainer missing,** chain missing, loose, broken. Drain cock leaking. Support straps rusted through, loose. Filler pipe vent hose & hose clamps missing, loose, rusty. 20 GAL PER MIN stencil missing.

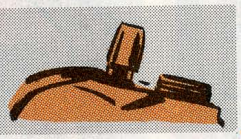
***BRAKE LINES & HOSE CONNECTIONS — Lines leaking,** twisted, kinked, connections loose.

***EMERGENCY BRAKE LINING —** Loose, worn, linkage loose.

***DIFFERENTIAL** — Leaky plug (check for looseness). Improper lube level (use same procedure for checking as on transmission). Bolts loose, vents plugged, gasket leaks.

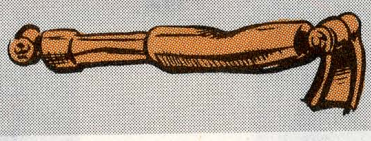


***GEAR CASE AIR VENTS** — Stuck, clogged, loose.

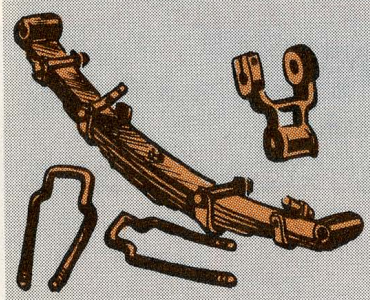


HYDRAULIC LINES & BRACKETS — Pinched.

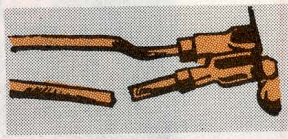
***SHOCK ABSORBERS** — Bushings worn, cut, damaged. Housing bent. Cotter pin missing. Bracket loose.



***SPRINGS, U-BOLTS, CLIPS, SHACKLES — Broken leaves. Rebound clips, U-bolts missing, loose.** Rubber bump plates missing. Shackle mounting bracket rivets broken (cracked paint around rivets is a sign of broken rivets).



***CROSS BRACES** — Bent, loose.



***TRANSMISSION LINKAGE —** Bent, **broken.**

***ENGINE & TRANSFER CASE MOUNTINGS** — Bent, loose.

UNDERNEATH VEHICLE

FUEL TANK — **Leaking,** loose, bent, dented. Gas level too high (must be at least 2 inches below top of tank). Outside of tank dirty, rusted needs paint. **Fuel strainer missing,** chain missing, loose, broken. Drain cock leaking. Support straps rusted through, loose. Filler pipe vent hose & hose clamps missing, loose, rusty. 20 GAL PER MIN stencil missing.

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HYDRAULIC LINES & BRACKETS — Pinched.

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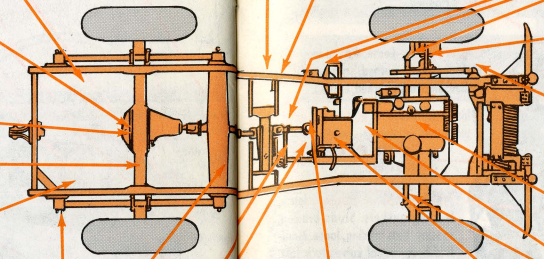


***CROSS BRACES** — Bent, loose.

***TRANSMISSION LINKAGE** — Bent, **broken.**

***ENGINE & TRANSFER CASE MOUNTINGS** — Bent, loose.

TRANSFER CASE — Linkage loose, mounting brackets loose, improper oil level, leaks.

MUFFLER & CLAMPS cracked, burned out, clamps worn, loose, missing.

TAIL PIPE — **Clogged** (with mud), **collapsed, cracked,** dented. Clamps missing, loose.

***DRIVE SHAFTS & UNIVERSAL JOINTS — Bolts or shafts loose. U-joints loose, not lubed. Excessive play in spline shaft.**

***TRANSMISSION** — **Leaky Drain plug** (check for looseness). Improper lube level. (When lube's cold, stick in a clean finger up to the first joint—the tip should just be touching the lube. When lube's hot, should be at plug level.) Mounting bolts missing, loose.

BRAKE MASTER CYLINDER — Loose. Leaking.

STEERING GEAR FILL & LEVEL — Leaks. *Improper lube level.

***FRONT AXLE HOUSING** (CV JOINTS)—(Gotta be lubed as outlined in Note 6 of LO 9-8030.) Rusty, badly scored, flange bolts loose, turning stop bolt weld broken, leaks, dirty breather vents.

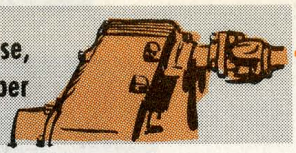
***STEERING IDLER ARM** — **Loose,** bent, not lubed.

ENGINE OIL PAN— Dented, **leaky gasket, leaky plug** (check for looseness). **Bolts loose.**

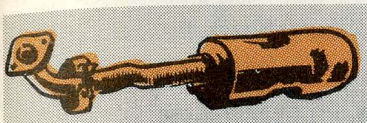
FLYWHEEL HOUSING—Drain plug in (in only for fording). Not in map compartment.

***TIE ROD ENDS** — Bent, loose, worn.

TRANSFER CASE – Linkage loose, mounting brackets loose, improper oil level, leaks.

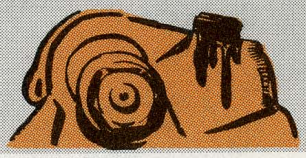


BRAKE MASTER CYLINDER – Loose. Leaking.



MUFFLER & CLAMPS cracked, burned out, clamps worn, loose, missing.

STEERING GEAR FILL & LEVEL – Leaks. *Improper lube level.



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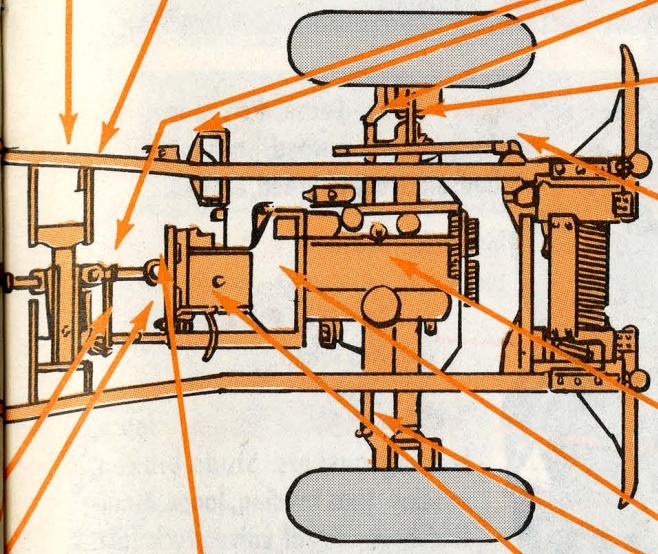

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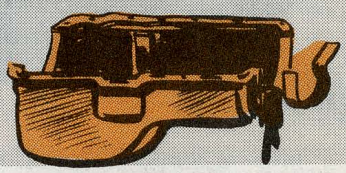

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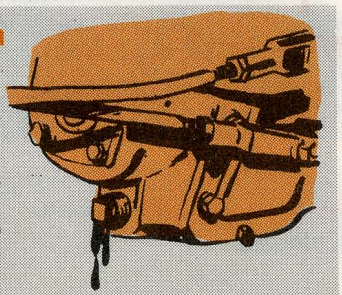
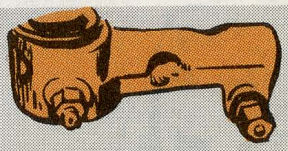




***TIE ROD ENDS** – Bent, loose, worn.

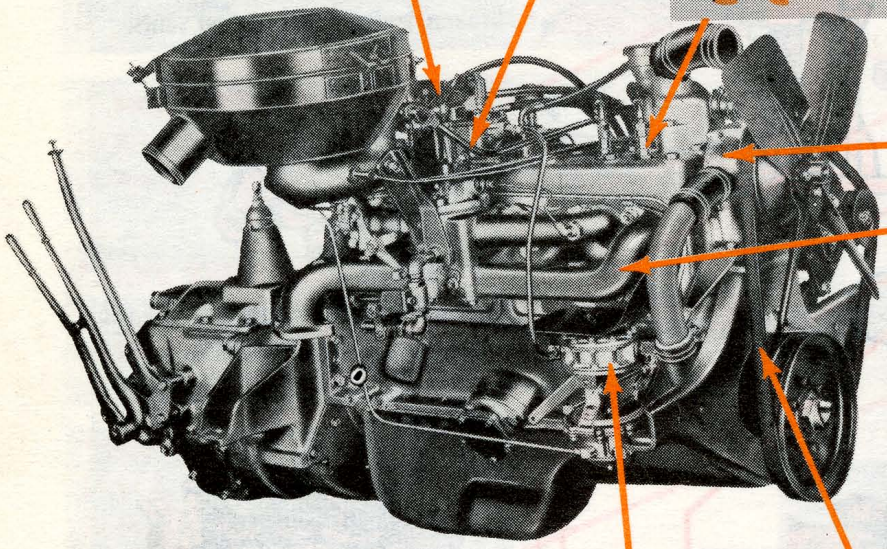
RADIATOR — COOLING SYSTEM HOSES, CLAMPS — Coolant below proper level (should be within 2¼ inches below top of filler neck). Water rusty, dirty. Shrouding loose. Brackets loose. **Radiator leaking.** Cap gasket missing. Fins dirty, bent, lotta bugs, leaves. Hoses **worn, torn,** collapsed. Clamps **missing, broken,** loose.

***FORDING VALVES** — Free adjustment — should travel through full arc.

***CARBURETOR** — Engine idling too fast or too slow. Air cleaner loose, oil level low (must be up to level mark), more than ⅛ inch dirt, parts missing, gasket missing. Linkage sticking. Vent lines & hoses cracked, bent, loose, **leaking, holes,** clogged.

CHOKE — Won't work, wire broken, bracket broken, screw missing.

***SPARK PLUGS** — Loose, dirty, porcelain cracked, burned; gaskets crushed; electrodes burned, eroded.



WATER PUMP — Not lubed.

***MANIFOLDS — Cracked,** loose, leaking gaskets. Studs broken, missing. Nuts missing, loose. Manifold heat control valve stuck fast.

FAN BELT — Cracked, dangerously frayed or shredded, oily, greasy. Incorrect adjustment (should be ½-in deflection).

RADIATOR-TO-ENGINE-SUPPORT RODS — Missing, loose, rusted.

FUEL PUMP — Broken, loose, leaks. Primer handle missing, broken.

CRANKCASE VENT LINE — Loose, broken, pinched.

ENGINE COMPARTMENT

RADIATOR — COOLING SYSTEM HOSES, CLAMPS — Coolant below proper level (should be within 2¼ inches below top of filler neck). Water rusty, dirty. Shrouding loose. Brackets loose. **Radiator leaking.** Cap gasket missing. Fins dirty, bent, lotta bugs, leaves. Hoses **worn, torn,** collapsed. Clamps **missing, broken,** loose.

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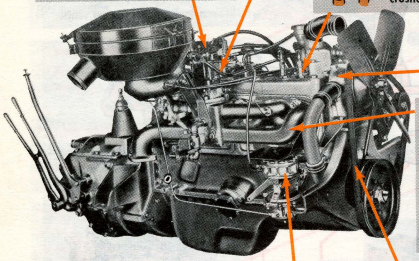

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CRANKCASE VENT LINE — Loose, broken, pinched.

UNUSUAL ENGINE NOISES — If you hear any unusual engine noises, report 'em to your organizational mechanic.

***CYLINDER HEAD — Cracked,** compression or water leaks. (A hissing sound is the tipoff.)

CRANKCASE OIL — Level too low (should be no lower than one quart below top full mark). Too high (should be no higher than ⅛ inch above top full mark). **Cap missing.** Cap gasket damaged, missing. Stick's baffle missing.

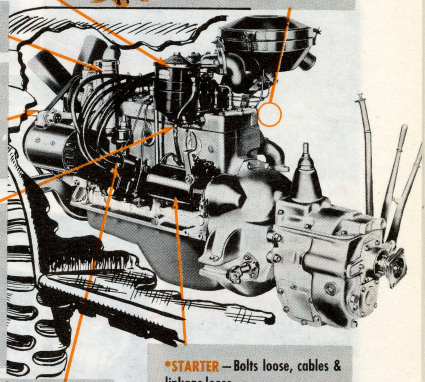
ENGINE MOUNTING — Bolts missing, loose.

OIL FILTER & BRACKET — Filter leaks, dirty, loose. Retaining chain and cap missing, broken.

***REGULATOR** — Loose electrical connections, regulator mounting loose, seals broken.

BREATHER — Loose, bent.

***GENERATOR** — Loose electrical connections, generator mounting loose, bracket broken.



***ENGINE WATER TEMPERATURE SENDING UNIT** — Loose, rusty, mounting brackets missing, loose electrical connection.

***DISTRIBUTOR ASSEMBLY** — Loose electrical connections (should be finger tight only), mounting loose, dirty. Cap cracked, breaker points pitted.

***STARTER** — Bolts loose, cables & linkage loose.

***IGNITION WIRING** — Cracked, shield broken open; plug threads crossed.

COMPARTMENT

UNUSUAL ENGINE NOISES — If you hear any unusual engine noises, report 'em to your organizational mechanic.

CRANKCASE OIL — Level too low (should be no lower than one quart below top full mark). Too high (should be no higher than 1/8 inch above top full mark). **Cap missing.** Cap gasket damaged, missing. Stick's baffle missing.

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ENGINE MOUNTING — Bolts missing, loose.

OIL FILTER & BRACKET — Filter leaks, dirty, loose. Retaining chain and cap missing, broken.

***REGULATOR** — Loose electrical connections, regulator mounting loose, seals broken.

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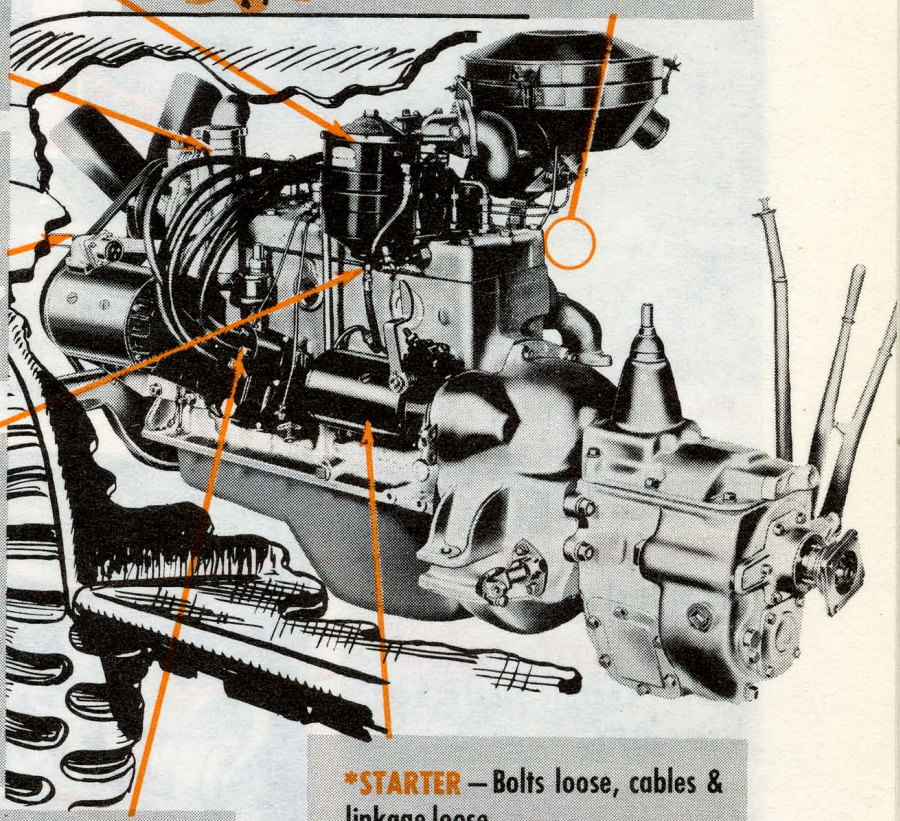

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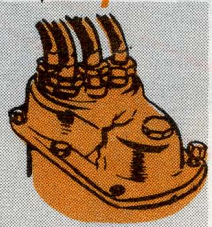


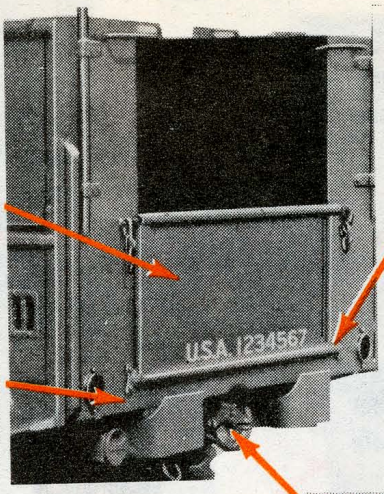
***IGNITION WIRING** — Cracked, shield broken open; plug threads crossed.

OUTSIDE OF VEHICLE (REAR)

PIONEER BRACKETS — Missing, bent, loose; straps missing, mildewed, worn, torn.

TAILGATE—Bent, chains missing or broken; chain guard missing; retaining hook bent so tailgate won't open.

REAR LIGHTS — Not working, lenses cracked, broken, discolored, covered with paint.



TARP HOOKS — Missing, bent, rusty.

REFLECTORS — Missing, cracked, broken, dirty, discolored.

BUMPERETTES — Bent, loose, broken.

PINTLE & LIFTING SHACKLES — Missing, loose, not lubed, can't be opened, lock pin not attached with chain, pintle spring broken.

TRAILER COUPLING RECEPTACLE — Full of dirt, damaged, loose, cover bent, missing.

IF YOU'VE GOT A WINCH

CHAIN—Rusty, dirty, hook hanging over bumper (must be anchored.) Damaged links, damaged hook.

***WINCH PROP SHAFT SHEAR PIN** — Broken, rusty, not lubed (should be coated with GAA semi-annually), missing.

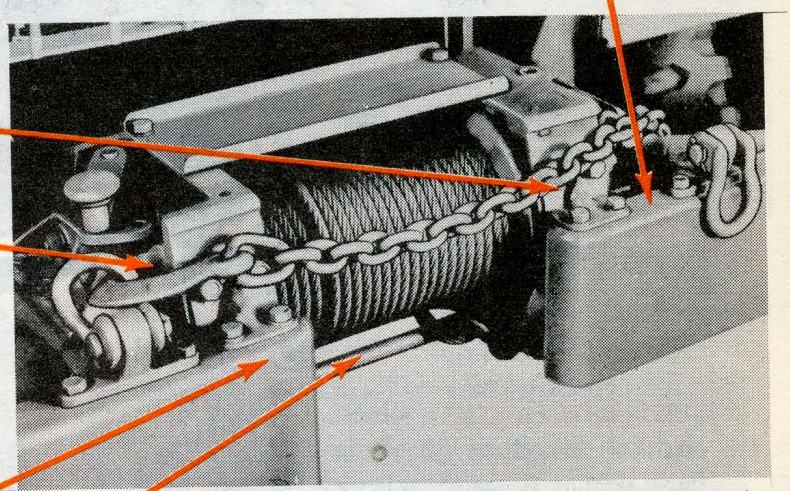
WINCH WORM CASE—Lube level not at level plug.

CLUTCH SHIFTER HANDLE — Doesn't operate freely, bent, broken, rusty.

THIMBLE & CLAMPS—Worn, damaged.

WINCH BUMPER BRACKET BOLTS—Loose.

CABLE—Dirty, rusty, worn, shredding, not lubed, loose on drum, kinked.



WINCH DRIVE SHAFT — Dry (should be lubed), dirty.

WINCH FRAME BRACKET BOLTS —Loose.

CARGO COMPARTMENT

SPARE WHEEL —Missing, incorrect tire pressure, tread worn, brackets missing.

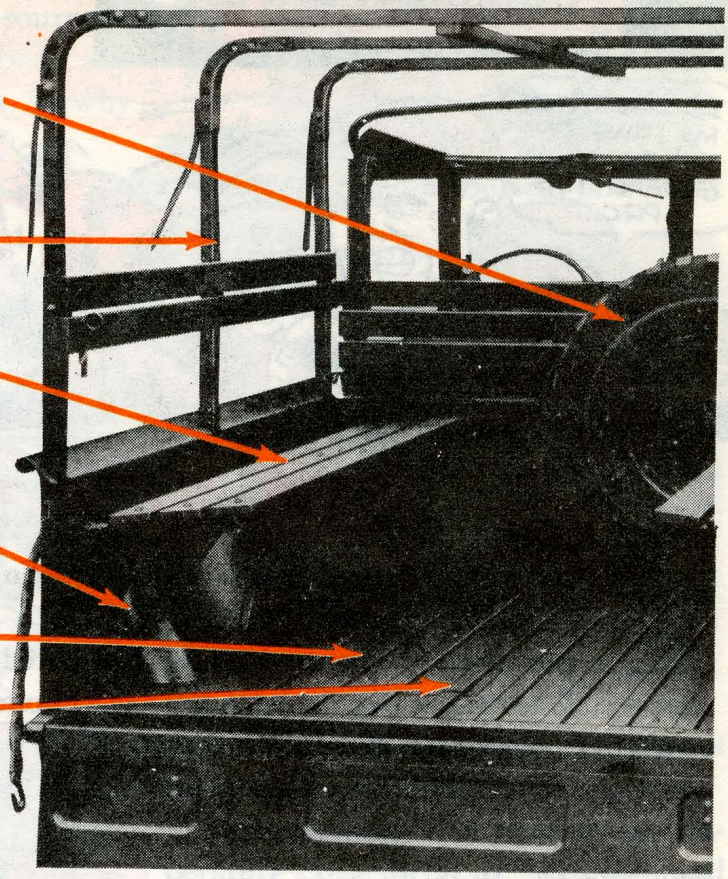
SIDE RACKS —Missing, bent, wood rotted, tie down hooks and cargo bolts broken, missing, bent, loose.

SEATS — Broken, rotted, brackets missing or bent, cotter pins missing, bracket retaining pins missing.

COVER PLATE OVER FUEL TANK FILTER —Missing, loose.

FLOOR PLATES — Missing, bent, damaged.

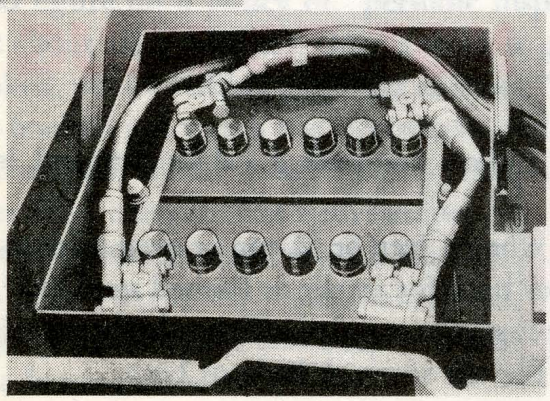
COVER PLATE ON FILLER NECK OF GAS TANK — Missing, bent, loose.



BATTERY COMPARTMENT

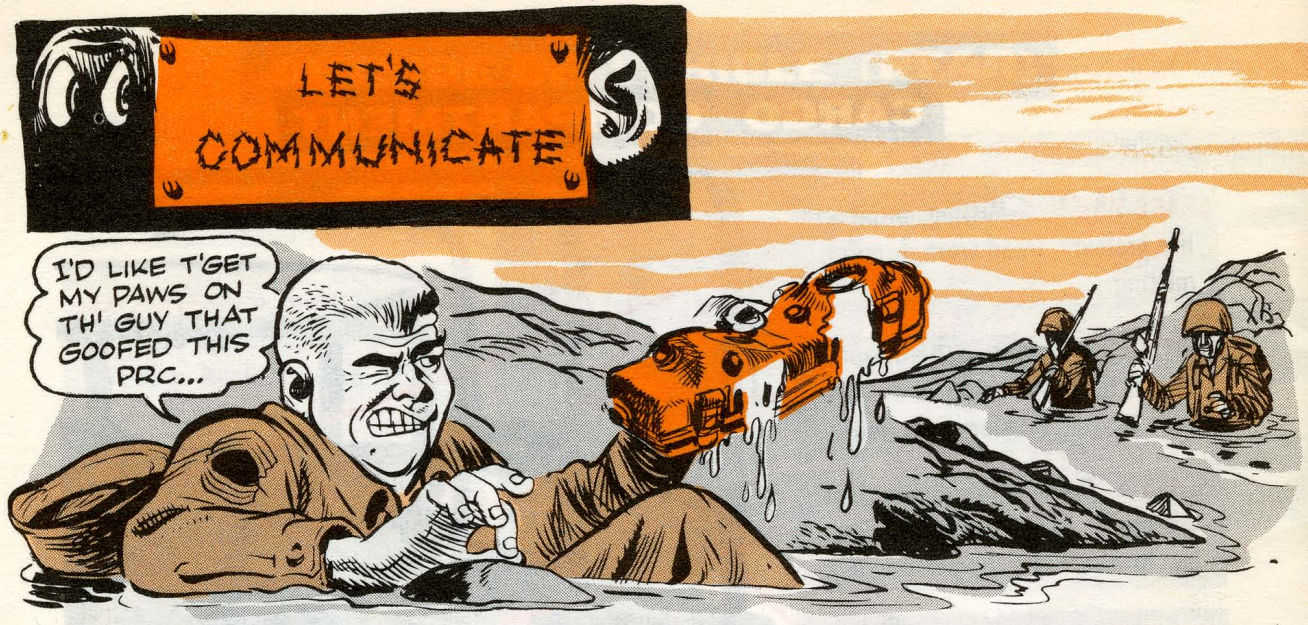
BATTERY CONNECTIONS — Loose, corroded, insulation broken, frayed. Ground cable hits battery cover.

BATTERY COMPARTMENT — Rusted, corroded, trashy.



***BATTERIES—Vent caps missing or clogged.** Specific gravity below 1.220 at 80° F (check it with the hydrometer from your unit's second echelon tool kit). Case cracked, dirty, corroded, loose in carrier. (Water level should be 3/8 inch below top of cell, or covering plates.)

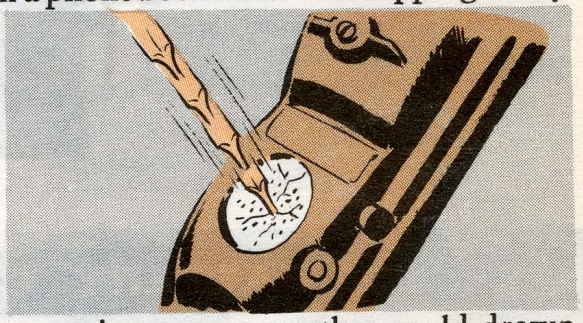
COVER—Hold down bolts and nuts **missing,** rusted, corroded. Cover loose, rusted, corroded. Battery cover latch and support rod missing, broken, bent.



TAP, TAP, TAP

That's the way they go—those moisture-proofing covers on the mouthpiece and earpiece of the Perk 6 (AN/PRC-6).

A guy gets restless, impatient, just plain bored out there waiting for the next message. So he makes like the "doodler" in a phone booth. He starts tapping—only instead of using the wall of a booth he picks on the moisture-proofing covers on the receiver and transmitter of his handie-talkie.



And those covers can't take that kind of punishment. They'll end up holey as all that, their moisture-proofing days finished for good. And the next fording operation or wet weather could drown the set and maybe wash out a mission.

'Stead of tappin', then, try thinking about Connie to help the clock go around. Better still, a touch of preventive maintenance on that PRC-6 while you're waiting will keep everything on tap and ready to go.

TO PLUG OR NOT TO PLUG

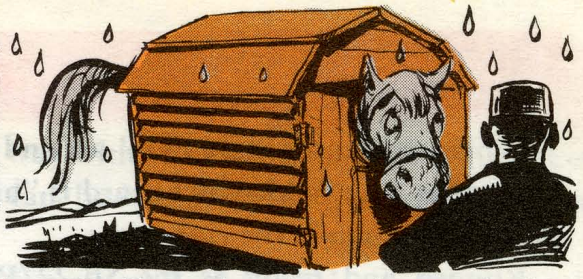
That's the question, sometimes.

Whether it's better to leave the radio's connecting cables plugged in—or whether to unplug 'em.

This question usually rolls around when a Jeep or ¾-ton or even a deuce-and-a-half mounting radio equipment goes back for repair or limited storage.

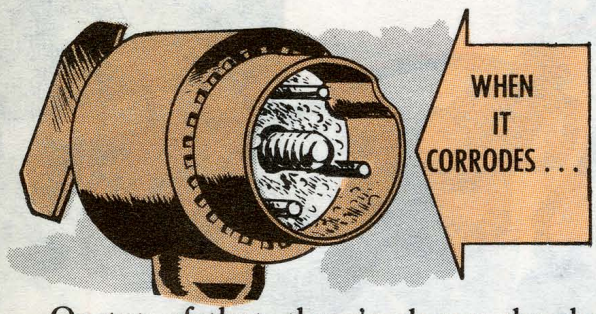
Corrosion is the problem. Does a plug get corroded quicker by being disconnected—or left in position? Well, it's the old story. A little of both.

For instance: When you unplug a plug, you're exposing it to what some people call "external water sources." Which could include just about any way that a plug could get wet. So why not leave it plugged in?



There's trouble brewing if you do that, too. Even though you hear talk about

"sealed units" and "waterproof connections," there's still the fact that nothing is completely sealed or waterproof. Or, for that matter, moisture proof.

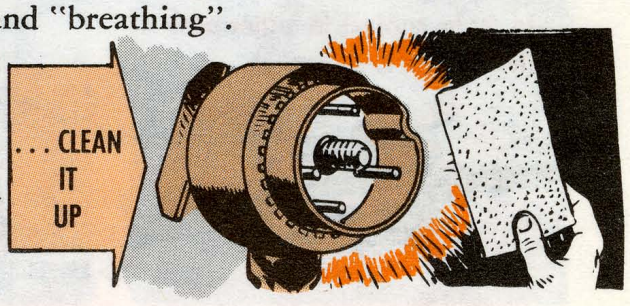


Because even small changes in temperature cause metal to "breathe," and that breathing produces small amounts of moisture. And the more that moisture builds up, the closer you're getting to corroded metal on the inside of your connector.

On top of that, there's always the chance of an electrolytic action goin' on inside a plugged-in plug. That'll lead to arcing and damage next time the radio is switched on.

So figure on a policy of "periodic inspection" of all plugs at all times under just about all conditions. Once a week is good. 'Cause if your plugs are left unhooked, you're risking exposure to those "external water sources." And if they're left hooked up, watch the electrolysis and "breathing".

Corrosion fades away mighty fast after a few brisk strokes with sandpaper or a few minutes work with a burnishing tool. That quick maintenance will brighten your plugs and keep the current flowing smoothly.

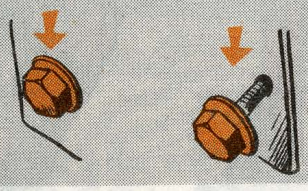


PM FOR

When the words start flyin' around as fast as the bullets, it's comforting to know that your field switchboard is "hitting on all 12" and getting the message to the right man at the right time.

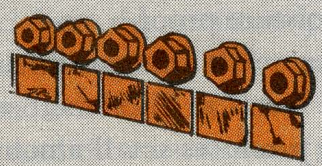
Rugged and ready as the SB-22/PT portable field switchboard is, it still needs the preventive maintenance touch that usually means the difference between success or failure.

CAPTIVE SCREWS—loose, too tight.



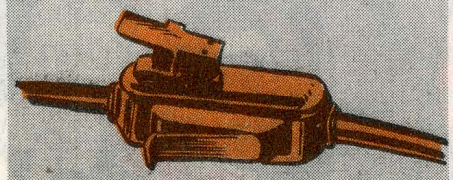
SIGNAL LIGHTS—fail to operate.

DESIGNATION STRIP—dirty, mutilated.

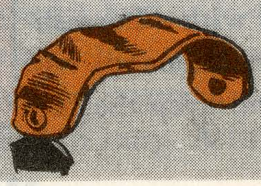


STRAPS—mildewed, torn, frayed.

PUSH-TO-TALK-SWITCH — fails to make contact in either position; intermittent contact.



HEADBAND — bent, dirty, cracked, mildewed.



JACKS—tension weak, not holding.

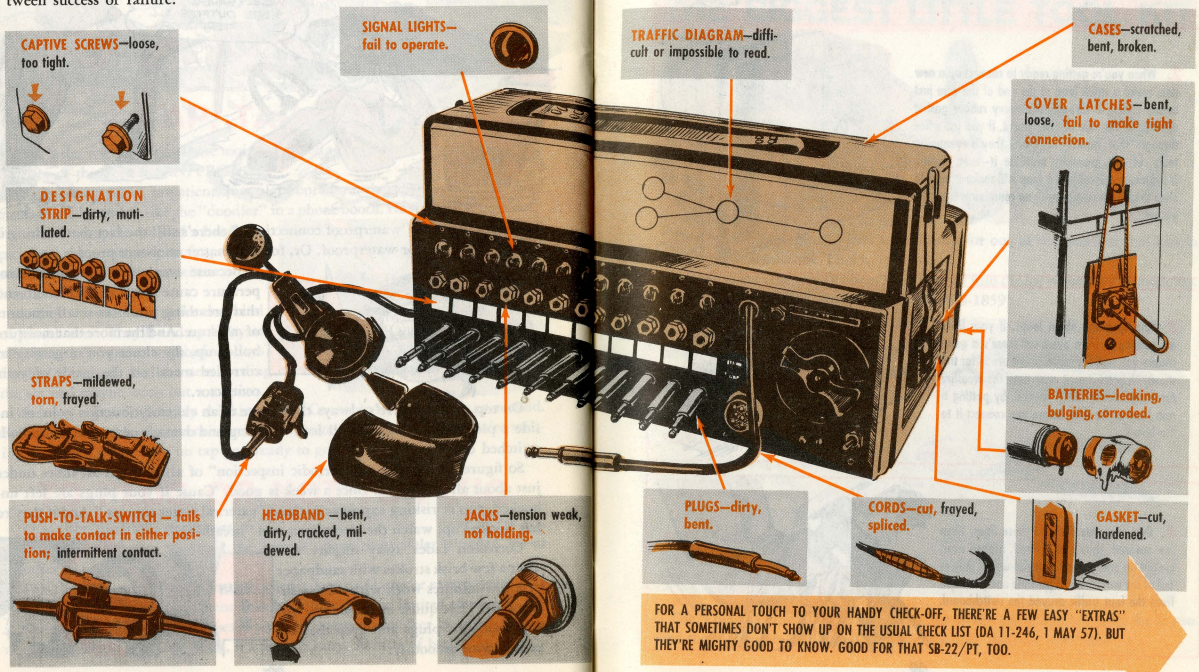
PM FOR AN SB

When the words start flyin' around as fast as the bullets, it's comforting to know that your field switchboard is "hitting on all 12" and getting the message to the right man at the right time.

Rugged and ready as the SB-22/PT portable field switchboard is, it still needs the preventive maintenance touch that usually means the difference between success or failure.

And a successful SB can be kept that way with a quick "be-your-own-inspector" treatment that carries a message that can be heard five-by-five anywhere, any time.

The items in heavy type on the check list are major deficiencies. Let your repairman know about 'em quick.



FOR A PERSONAL TOUCH TO YOUR HANDY CHECK-OFF, THERE'RE A FEW EASY "EXTRAS" THAT SOMETIMES DON'T SHOW UP ON THE USUAL CHECK LIST (DA 11-246, 1 MAY 57). BUT THEY'RE MIGHTY GOOD TO KNOW. GOOD FOR THAT SB-22/PT, TOO.

AN SB

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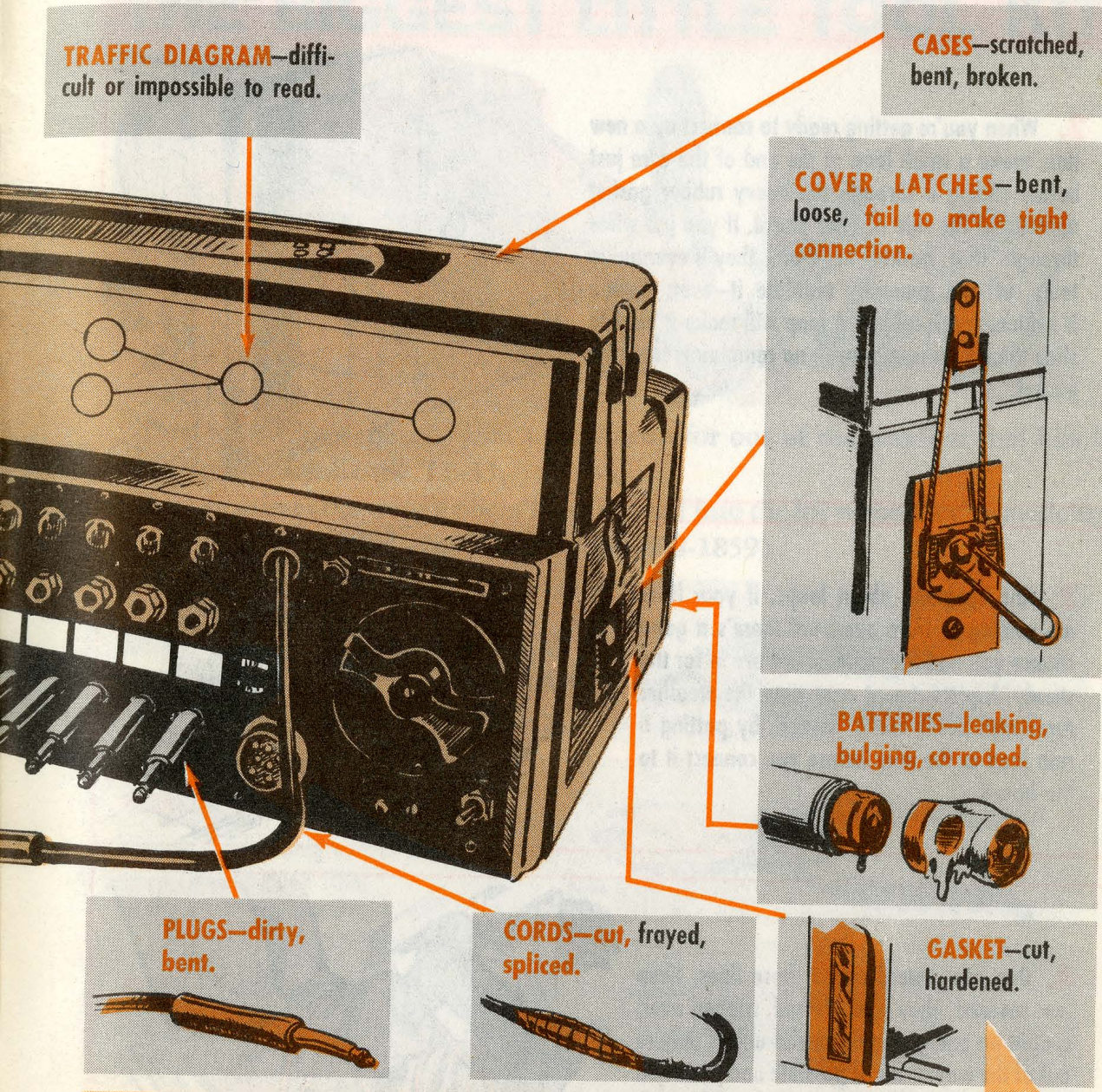

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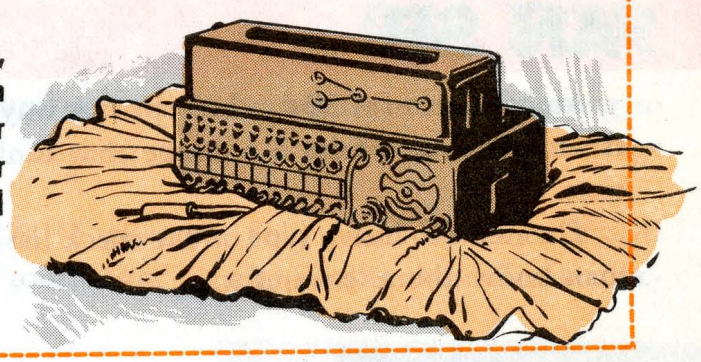
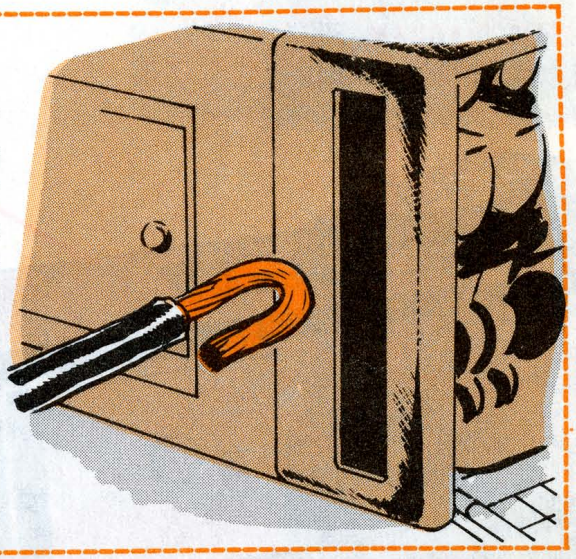
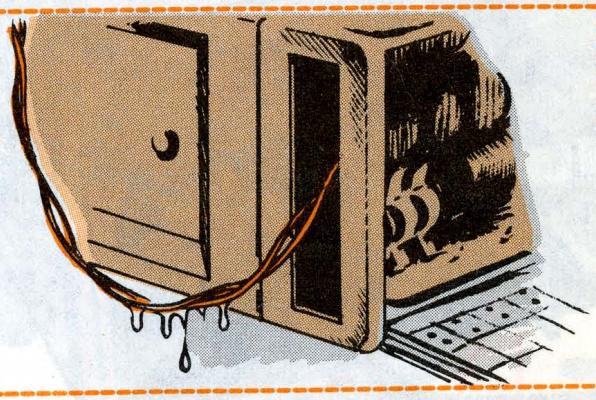
1. Never lay the switchboard on the cold, wet ground. Give it a little protection from the weather by putting it on a poncho or piece of canvas. And leave enough left over so's you can fold it over the switchboard when the rain or snow starts fallin'.



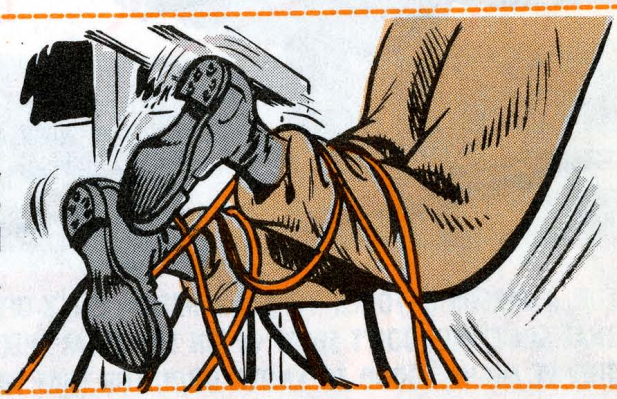
2. When you're getting ready to connect up a new line, make a small loop at the end of the wire just before sliding it through the heavy rubber gasket opening at the side of your board. If you jab wires through that gasket head-on, they'll eventually tear, cut and generally mutilate it—even though it's thick, tough rubber. A loop will make it easy to slide the wire through—with no complaints from the gasket.



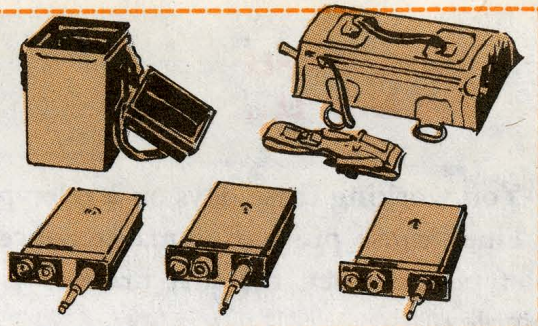
3. And speaking about loops, if your lines are coming in from overhead there's a good chance you and the switchboard are in for the steady drip treatment next time the weather turns wet. Easily fixed, though, by putting a rain loop in the wire before you connect it to the board.



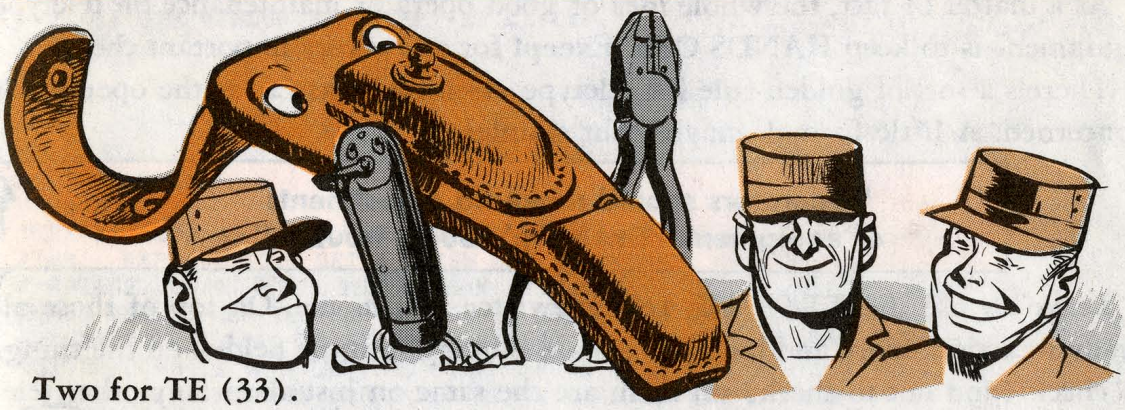
4. One other word about those lines. Keep 'em covered. They'll get kicked, tripped over, caught on and generally cursed unless they're out of the way as far as possible and protected from the foot traffic around the switchboard.



5. And when you're ready to move out, look around and make sure your Accessory Kits MX-230/PT and MX-230A/PT are ready to go. You'll want to be sure they're packing all the running spares, too, and that those spares are in good condition. You won't have time to do anything about it later on.



THE BIGGEST LITTLE TOOL KIT



Two for TE (33).

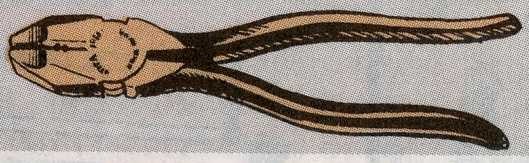
Two tools plus a pouch—that's the lineup for one of the handiest tool kits in this man's Army . . . the TE-33.

But sometimes the wrong pliers'll get slipped into the kit when they're made up.

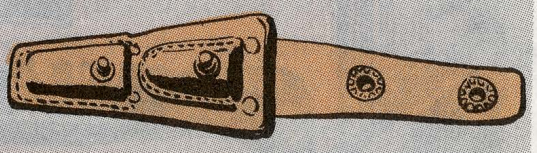
Leave us look at the TE-33 (FSN 5180-408-1859):

KNIFE, POCKET (TL-29):
cutting blade 2⅜ in min to 2 9/16 in max length; w/screwdriver and wire scraper. FSN 7340-240-5943 (QM)

PLIERS (TL-13-A):
lineman's; sidecutting w/wire skinner; 6 in lg. FSN 5120-247-2063 (QM)



POUCH CS-34:
leather w/flap; belt fastening type. FSN 5140-498-8898 (SIG)



The TE-33 is Signal Corps issue, but the knife and pliers are QM. So if you need the whole set—call Signal. If you need only one tool—call QM.

SOME SIMPLE PM THAT'LL...

SUIT YOU

You working these days on a teletypewriter rig?

Fine, 'cause preventive maintenance on an AN/FGC-20 (or just about any teletypewriter set, for that matter) is just about as simple as the equipment is complex.

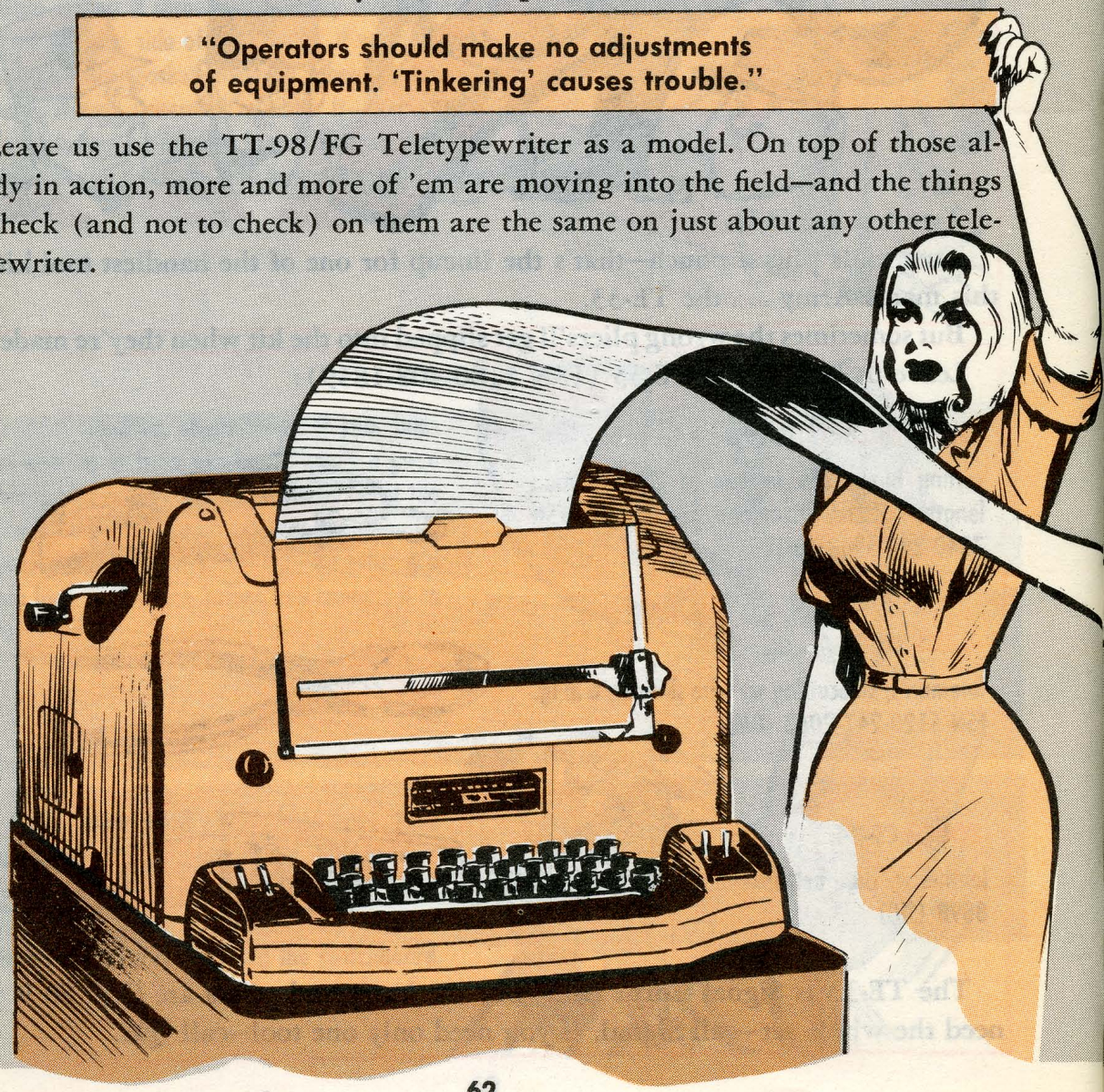
A hand or two...a clean cloth...a watchful eye...and a few minutes of your time. That's all a sharp operator needs to keep the messages moving. No special tools. No fancy test equipment.

As a matter of fact, the whole idea of good operator maintenance on teletype equipment is to keep HANDS OFF. Except for a few very important checks.

There's a sort of golden rule for teletype assemblies—as far as the operator is concerned. A little formal, maybe, but simple:

> **"Operators should make no adjustments of equipment. 'Tinkering' causes trouble."**

Leave us use the TT-98/FG Teletypewriter as a model. On top of those already in action, more and more of 'em are moving into the field—and the things to check (and not to check) on them are the same on just about any other teletypewriter.



SOME SIMPLE PM THAT'LL...

SUIT YOU TO A TT

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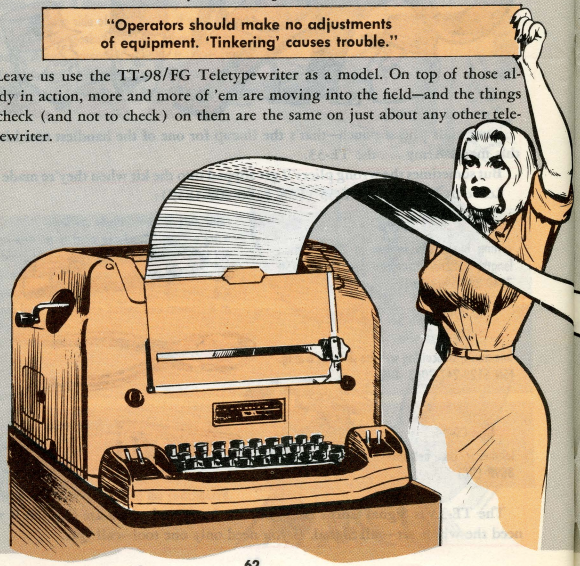

```
NNNN
FP RUECLC
DE RUEGHL 102
P 051802Z                          PAPER
ALWAYS HAVE A GOOD SUPPLY ON HAND, OF COURSE.  AND WHEN THE
RED STRIPE STARTS TO SHOW, SHUT DOWN AS SOON AS THE PRESENT
INCOMING MESSAGE IS FINISHED.  ALWAYS KEEP AN EYE PEELED ON THE
ROLL TO BE SURE THE PAPER IS FEEDING IN AND OUT RIGHT.
THAT STUFF CAN FOUL UP MIGHTY FAST.  AND WHEN YOU OPEN UP THE
DUST COVER WINDOW, PULL BACK THE COPY HOLDER AT JUST ABOUT THE
SAME TIME.  THE HOLDER ACTS AS A PROP FOR THE WINDOW WHEN THE
WINDOW IS OPEN. JUST AS SOON AS THE NEW ROLL IS IN PLACE AND READY
—CLOSE THE WINDOW AND KEEP 'ER CLOSED.
DA GRNC
BT

NNNN
PP RUECLC
DE RUEGHL 103
P 051807Z                          RIBBON
JUST AS SOON AS THE RIBBON SHOWS SIGNS OF FADING, DON'T WASTE
TIME.  REPLACE IT.  GET A FRESH ONE IN THERE.  CENTER  THE
CARRIAGE...HAND-WIND THE RIBBON ONTO ONE SPOOL...LIFT THE WHOLE
WORKS OUT.  WHEN THE NEW RIBBON IS HOOKED UP AND THE SPOOLS
ARE BACK IN PLACE, TIGHTEN THE RIBBON BY TURNING ONE SPOOL WITH
ONE HAND WHILE HOLDING THE OTHER SPOOL WITH YOUR SPARE MITT.
AND SORT OF STAND BY FOR A FEW MINUTES AFTER THE MACHINE
STARTS UP AGAIN TO BE SURE THE RIBBON IS FEEDING OK AND THE SPOOLS
REVERSE.  IF YOUR RIBBON EVER GETS STUCK OR JAMMED DUE TO WEAR,
NO NEED TO WASTE TIME "TINKERING" WITH IT...REPLACE IT.
DA GRNC
BT

NNNN
FP RUECLC
DE RUEGHL 104
P 0518122                          FUSES
IF ONE BLOWS, NATURALLY YOU REPLACE IT.  IF THE REPLACEMENT
BLOWS SOON AFTER, DON'T REPLACE IT.  SHUT DOWN THE MACHINE AND
CALL FOR A REPAIRMAN, 'CAUSE TWO BLOWN FUSES IN A SHORT TIME
IS A SURE CLUE TO SECOND, THIRD, OR MAYBE HIGHER ECHELON TROUBLE.
DA GRNC
BT
```

About the only other time a good operator wants to open up the cover is maybe if the motor is running too fast or slow. And only a senior operator, at that, should open up. He'll use a tuning fork rated at 180 VPS to check its synchronization. Whenever possible, though, call a repairman for this chore. Or switch to a standby machine. In any event, that motor speed should be checked once a week...for 3,600 RPM.

When it comes to filling out DA Form 252, you'll be interested only in the "short form" approach. That is, all you're going to be looking at are the first three items of the daily checks, and item 6 of the weeklies. And that's all.

LIKE IT SHOWS YOU ON THE NEXT PAGE

TO A TT

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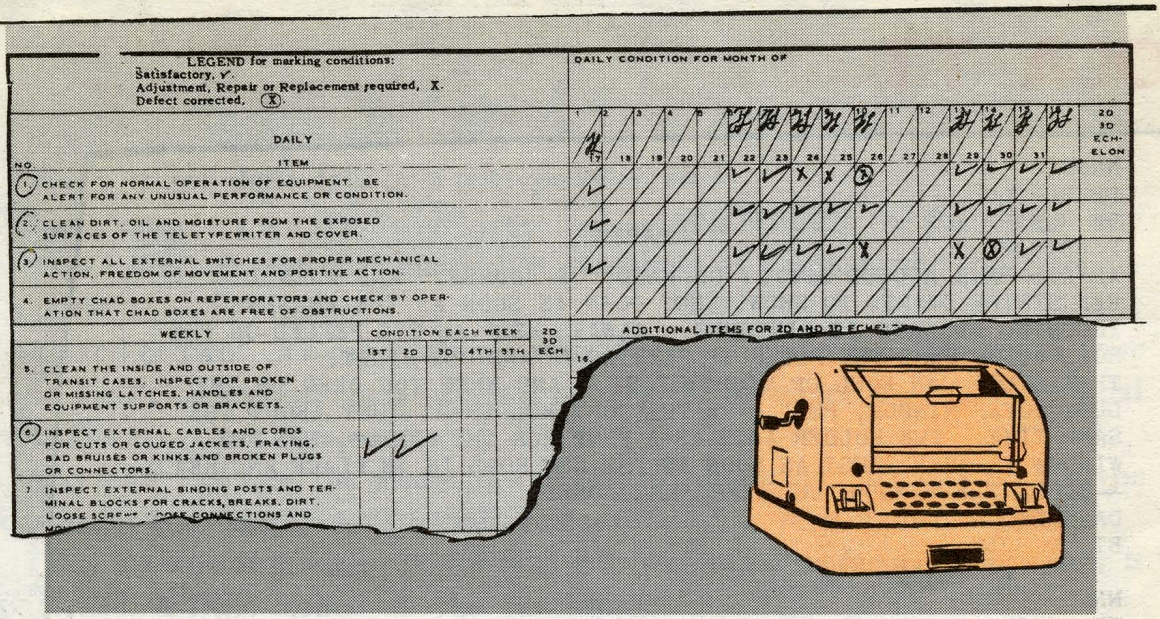


Naturally, it's always a good idea to run a clean, dry rag over the cover every time you're ready for a session at the keyboard. That'll keep things free of dirt, dust, etc. And always give the motor a little warmup (as much as 15 minutes) before pounding the keys.

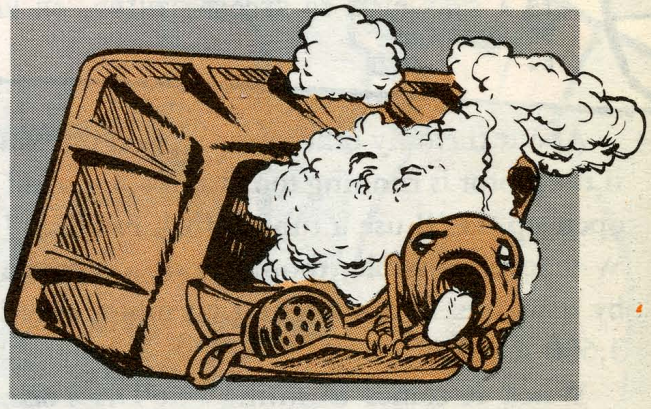
These few simple but mighty important maintenance steps will make sure the teletypewriter does what it's supposed to do.

STEAM STORY

Let it out!

The steam, condensation, moisture, etc. that collects inside the external interphone box on the rear of your tanks.

It builds up inside that troop-telephone box almost every time a tracked buggy gets a washing or steam cleaning. That can't be helped very much, but a lot can be done to let the moisture out before it does its dirty work. Just open the door on the box and let her air out.



'Cause moisture, etc., is not a telephone's best friend. It leads to rust, bad contacts and corrosion. Reach in there with a clean, dry cloth and wipe off the control box, handset, cable and anything else in there that's wearing beads of moisture.

Many tanks, of course, have a hole in the bottom of their box to breath out routine amounts of condensation. But the open-door policy is best and quickest when a tank has been blitzed by a sudden steam or water bath.

Connie Rodd's BRIEFS

Water tank cleanout

Could be that you've been having trouble with your 1½-ton water tank trailer. You turn on the water and it comes out looking like—well not clean. Then the tank needs an inside refinishing job. There's an MWO 9-2330-213-50/2 (23 Mar 59) that spells out how your support unit can do the job on the M106's, M106A1's, M107's and M107A1's. So turn your trailer in to them if it needs refinishing . . . don't try doing it yourself.

Another handy pub, bub

Another pub handy to have around is SB 38-100 (March 1959). It gives you a list of most of the preservation, packaging and packing materials used by the Army. You'll find the FSN's, the tech services responsible, and what the items are used for.

Shelter scoop

The latest info on CBR shelters is in TM 3-4240-203 (21 Nov 58), which covers installation, operation and maintenance of accessory equipment for protective shelters. It includes poop on the filters, antiblast closure, air pressure regulator and deflector, contaminated clothing chute, and the anti-backdraft valves that help keep you in the pink.

Sioux skids

Just in case you Sioux (H-13 H's) maintenance people haven't got the word, TSMC teletype 05-01064 (13 May 59) authorizes the use of 5/16-in bolts in your skid gear to replace those pesky rivets which loosen up after hard landings. It's a field maintenance job, so see your local support.

Chickasaw (H-19) Hose Kink

The battery overflow hose on your Chickasaw Choppers kinking? Bobtailing this hose 3/8 of an inch, from an overall height of 5 7/8 inches to 5½ inches will make it fit nicely from the battery box to the sump jar, without kinking.

Needed no more

Doesn't pay to keep an extra piece of equipment around . . . like the telescope eyepiece cover, FSN 1240-620-6810, for your M56 90-mm SP Scorpion. It's the one listed on page 136 of TM 9-2350-213-10. The telescope cover assembly, FSN 1240-620-6811, gives enough protection without the eyepiece cover. So why not turn in that cover as excess.

Would You Stake Your Life on the Condition of Your Equipment?

HOW'S YOUR "FITCAL"